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VOLUME IX.

March 25th, 1920.

臺灣植物圖譜

臺灣植物誌料

第九卷

Icones Plantarum Formosanarum

nec non et

Contributiones ad Floram Formosanam.

or,

Icones of the Plants of Formosa, and Materials for a Flora of the Island, based on a Study of the Collections of the Botanical Survey of the Government of Formosa.

By

Bunzō Hayata, *Rigakuhakushi.*

VOLUME IX.

Published by the Bureau of Forestry, Industries,

Government of Formosa,

TAIHOKU.

## NOTICE

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- I. Dicotyledons—Polypetalous: Ranunculaceæ—Rosaceæ. Published September 10th, 1911.
  - II. 1. Conspectus of the Flora of Formosa, Saxifrageæ—Dipsaceæ.  
2. New or Noteworthy Plants of Formosa. Published October 15th, 1912.
  - III. 1. Contributions to the Flora of Formosa, I.  
2. On the Systematic Position of *Mitrastemon*, as a Genus representing a special Tribus of the Rafflesiaceæ. Published December 25th, 1913.
  - IV. Contributions to the Flora of Formosa, II. Published November 25th, 1914.
  - V. Contributions to the Flora of Formosa, III. Published November 25th, 1915.
  - VI. Contributions to the Flora of Formosa, IV. Published November 25th, 1916.
  - VII. Contributions to the Flora of Formosa, V. Published March 25th, 1918.
  - VIII. Contributions to the Flora of Formosa, VI. Published March 25th, 1919.
  - IX. Contributions to the Flora of Formosa, VII. Published March 25th, 1920.
  - X. Will be published in September 1920.
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# **ICONES PLANTARUM FORMOSANARUM**

**NEC NON ET**

**CONTRIBUTIONES AD FLORAM**

**FORMOSANAM**

**IX.**

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AUCTORE

**Bunzō Hayata**



TO HIS EXCELLENCY BARON KENJIRO DEN,

**GOVERNOR GENERAL OF FORMOSA.**

SIR,

I have the honour to submit to your Excellency the ninth volume of the *Icones Plantarum Formosanarum, nec non et Contributiones ad Floram Formosanam* by BUNZŌ HAYATA, D. Sc.

HIROSII SHIMOMURA,

CIVIL GOVERNOR OF FORMOSA.

November 1, 1919, Taihoku.



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## INTRODUCTION.

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The present volume contains studies on species and varieties ranging from the Ranunculaceæ down to the Aroideæ. All the species of Phanerogamous plants are here arranged, as in the preceding volumes, after the system of BENTHAM and HOOKER. Of the species and varieties mentioned in this work, 139 are proposed as new species and 4 are regarded as new varieties of known species. Two new genera *Dolichorigna* and *Pseudosmilax* are proposed as new, while nine genera are mentioned as new to the flora of the island. The latter genera are as follows:—

<i>Reevesia</i>	<i>Anotis</i>	<i>Agyneia</i>
<i>Phelodendron</i>	<i>Mimulus</i>	<i>Alchornea</i>
<i>Filipendula</i>	<i>Siphonostegia</i>	<i>Orchis</i>

Thus, up to the present date, the total number of species of the flora, so far as is known, is 3,608 and 78 varieties belonging to 1,185 genera and 169 families.

Finally, I avail myself of this opportunity to tender my hearty thanks to the officials of the Government of Formosa, to whom I am much indebted for help in the collection of material and in the publication of this work.

BUNZŌ HAYATA.

October 1919, Taihoku and Tōkyō.



## Contributions to the Flora of Formosa.

### VII.

#### Ranunculaceæ.

##### *Clematis* LINN.

**Clematis garanbiensis** HAYATA sp. nov. Scandens et volubilis. Caulis teres multistriatus glaber. Folia opposita membranacea vel tenuiter chartacea ovata 4 cm. longa  $2\frac{1}{2}$  cm. lata apice obtusa sed ad summum breve cuspidato-apiculata basi late rotundata ad extremitatem acuta palmatim 5-nervia utraque pagine plus minus hirsuta, petiolis 3 cm. longis hirsutis. Panicula late cymosa cum pedunculo 9 cm. longa 10 cm. lata hirsuta, bracteis spathulatis 1–3 cm. longis, pedicellis ultinis 2 em. longis. Sepala 4 lanceolata 13 mm. longa 4 mm. lata apice acuta basi gradatim contracta extus villosa intus glabra. Stamina  $\infty$ , filamentis glabris filiformibus complanatis 3–10 mm. longis, antheris linearibus  $3\frac{1}{2}$  mm. longis  $\frac{1}{2}$  mm. latis apice apiculatis basi obtusis. Carpella 6–8, basi fusiformia cum stylis 7 mm. longa dense longeque sericeo-pilosa.

HAB. Garanbi, leg. T. KAWAKAMI, Juli. 1906.

Near *Clematis paniculata* THUNB.; but differs from it in having triangular ovate leaves. This is perhaps identical with a Chinese specimen labelled *C. paniculata* preserved in the herbarium of Kew, which I had an opportunity to look at, when I was there.

#### Magnoliaceæ.

##### *Illicium* LINN.

**Illicium arborescens** HAYATA (Fig. 1) Ic. Pl. Formos. II. p. 106. Descriptio aneta:—Carpella circ. 12 fere distincta maturitate crasse coriacea fere lignosa  $1\frac{1}{2}$  cm. longa horizontaliter patentia. Semina nitida valde complanata 9 mm. longa 5–6 mm. lata.

HAB. Tōzan, Arisan.

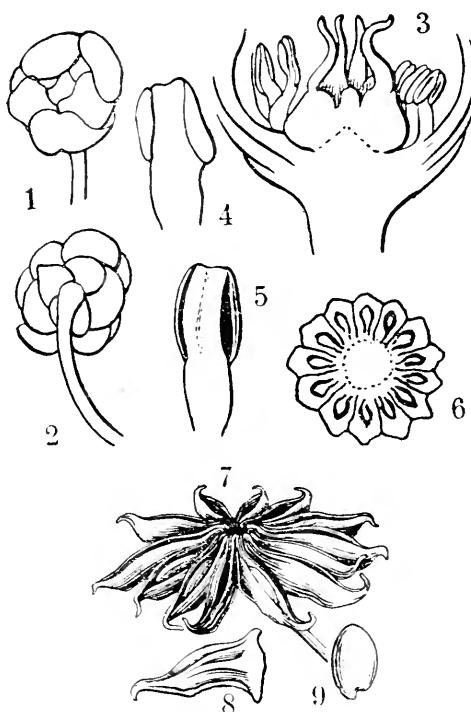


FIG. 1; *Illicium arborescens* HAYATA; 1, 2, flowers; 3, vertical section of the genital part of a flower; 4, 5, a stamen, seen from different sides; 6, cross section of carpels; 7, a fruit; 8, a carpel; 9, a seed.

Stamina circ. 20, filamentis incrassatis 2 mm. longis 1 mm. latis, antheris adnatis oblongis  $1\frac{1}{2}$  mm. longis obtusis. Carpella 8 fere distincta  $4\frac{1}{2}$  mm. longa latere complanata.

*Illicium anisatum* L. var. *leucanthum* HAYATA Gen. Ind. p. 2.

HAB. Arisan: Mingetsu, leg. B. HAYATA ad 7000 ped. alt. Aprili. 1916.

Near *Illicium anisatum*, but differs from it in the white flowers with larger stamens and less curved carpels.

NOTE: Outer sepals reddish; inner ones white or yellowish white.

***Illicium randaiense*** HAYATA sp. nov. (Fig. 3). Frutex vel arborescens, ramulis fusco-cinerascentibus glabris. Folia versus apicem ramorum approximativim disposita oblongo-ovata vel -obovata coriacea vel chartacea 8 cm. longa 3 cm. lata apice breve acuta ad summum obtusa basi acuta vel obtusa integræ,

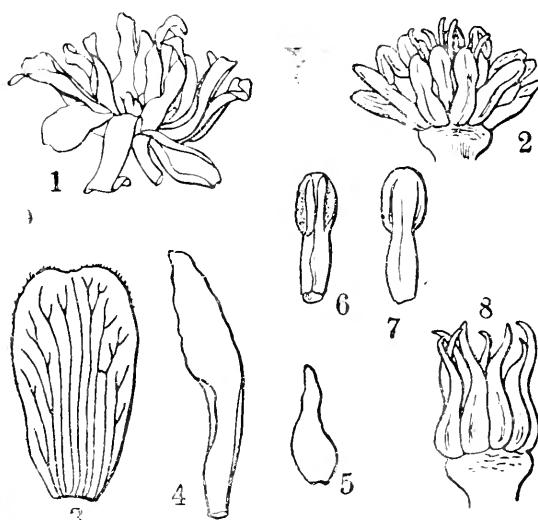


Fig. 2; *Illicium leucanthum* HAYATA; 1, a flower; 2, genital portion of a flower; 3, 4, 5, an outer, inner, innermost, segment; 6, 7, a stamen, seen from different sides; 8, carpels.

petiolis 5–10 mm. longis. Flores axillares solitarii, pedicellis circ. 1 cm. longis, bracteis basi pedicelli multi-seriatim dispositis, inferioribus latioribus rotundatis, superioribus plus minus longioribus, margine ciliolatis apice rotundatis breve vix vel haud apiculatis. Sepala 12–15, exteriora minora latiora lute oblonga 8 mm. longa totiusque lata apice rotundata truncata, interiora oblongo-linearia 12 mm. longa 5 mm. lata, intima

linearia 12 mm. longa 3 mm. lata, margine ciliolata. Stamina circ. 20, filamentis incrassatis  $1\frac{1}{2}$  mm. longis  $\frac{1}{2}$  mm. latis, antheris oblongis 1 mm. longis

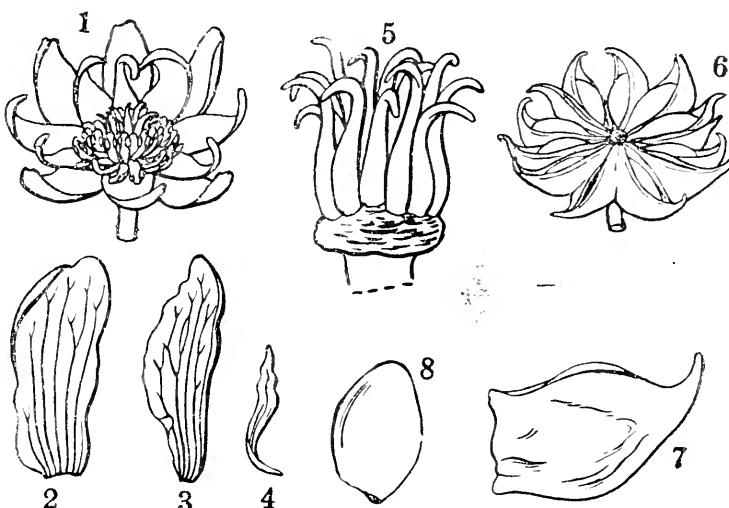


Fig. 3; *Illicium randaiense* HAYATA; 1, a flower; 2, 3, 4, an outer; inner, innermost, segment; 5, carpels; 6, a fruit; 7, a follicle; 8, a seed.

$\frac{2}{3}$  mm. latis apice obtusis. Carpella circ. 12, fere distincta basi 1 mm. lata cum stylis 3 mm. longa, maturitate ovata, partibus ovatis 1 cm. longis 8 mm. latis valde complanatis apice caudata, caudis recurvatis.

*Illicium anisatum* HAYATA Gen. Ind. p. 2 (non LINN.)

HAB. Randaisan, Manapan, leg. B. HAYATA et U. MORI, Aug. 1908.

Near *Illicium Tashiroi* MAXIM.; but differs from it in the free carpels.

### *Schizandra* MICHX.

**Schizandra arisanensis** HAYATA Ic. Pl. Formos. V. p. 1. Descriptio-  
nata:—Syncarpium elongatum 10–15 cm. longum; baccis globosis 8 mm. in  
diametro 2-spermis, semiinibus globoso-reniformibus 4 mm. latis  $3\frac{1}{2}$  mm. longis  
muricatis; testa crustacea, albuminibus carnosis.

HAB. Ritōzan, leg. Y. MATSUDA, Aug. 1918, No. 336.

### *Kadsura* Juss.

**Kadsura Matsudai** HAYATA sp. nov. Scandentissima, rami et ramuli  
graciles fusco-purpureo-rubescentes. Folia alterna lanceolata 9–10 cm. longa  
 $2\frac{1}{2}$  cm. lata apice obtusissima basi acuto-obtusa chartacea utraque pagine  
glabra margine subintegra, petiolis  $1\frac{1}{2}$ –2 cm. longis. Flores ♂ axillares solitarii  
pedunculati, pedunculis  $1\frac{1}{2}$  cm. longis glabris. Segmenta 12, exteriora minora  
triangularia ovata oblonga 1 mm.–5 mm. longa 2–3 mm. lata, interiora majora  
lineari-oblonga 1 em. longa  $4\frac{1}{2}$  mm. lata apice rotundata basi contracta margine  
sursum minute ciliolata, intima minora. Fasciculi staminales globosi 7 mm. in  
diametro, antheris sessilibus se toto connatis, loculis obovatis  $\frac{2}{3}$  mm. longis  
 $\frac{1}{2}$  mm. latis. Fl. ♀: ignoti. Syncarpium globosum axillare solitarium, pe-  
dunculis  $1\frac{1}{2}$ –5 cm. longis glabris; syncarpium 2–3 cm. in diametro, baccis  
subglobosis 1 cm. longis glabris rubris 2-spermis; semiinibus reniformibus  
 $3\frac{1}{2}$  mm. longis  $4\frac{1}{2}$  mm. latis plus minus complanatis, albuminibus carnosis.

HAB. Ariko, leg. Y. MATSUDA, Jan. 1917.

Near *Sch. arisanensis* HAY.; but differs from it in the lanceolate and  
obtuse leaves.

## Berberideæ.

*Mahonia* NUTT.

**Mahonia lomariifolia** TAKEDA. Contributions to the Knowledge of the Old World Species of the Genus *Mahonia* in Notes from the Royal Botanic Garden, Edinburgh, Vol. VI. p. 231.

**Mahonia morrisonensis** TAKEDA l. c. p. 239.

## Ternstroemiaceæ.

*Eurya* THUNB.

**Eurya leptophylla** HAYATA sp. nov. (Fig. 4). Frutex. Rami et ramuli gracillimi apice fulvo-hirsuti. Folia alterna oblonga vel oblongo-lanceolata 3-3½ cm. longa 1-1½ cm. lata apice acuminata vel acuta sed ad summum semper obtusa basi acuta margine crenulato-serrulata utraque pagine subglabra, costa supra impressa subtus elevata, venis venuisque utraque pagine tenuiter elevatis, petiolis 1-2 mm. longis tenuiter subalatis. Flores ad axillas fasciculati, pedicellis 2 mm. longis subglabris apice infra calycem bracteolis duabus instructis. Fl. ♂: maiores a male flower; 3, a female flower; 4, an immature fruit.

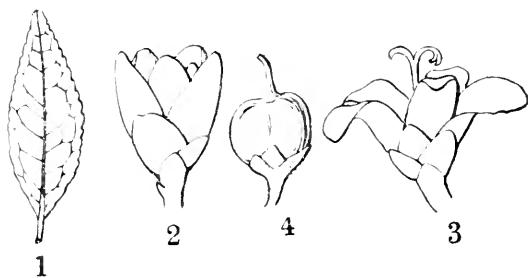


Fig. 4; *Eurya leptophylla* HAYATA; 1, a leaf; 2, a

quam fl. ♂; sepala rotundata 5 in magnitudine inaequalia, majora 2 mm. in diametro concava glabra basi plus minus connata. Petala 5 rotundato-oblonga 3 mm. longa 2 mm. lata concava apice rotundata subrotato-semiclausa glabra imbricata integra. Stamina 7-8 basi petali affixa, filamentis glabris filiformibus 2-2½ mm. longis, antheris ovato-oblongis 1 mm. longis ½ mm. latis apice apiculatis basi 2-lobatis glabris; radimentum ovarii nullum. Fl. ♀: quam fl. ♂ minores campanulato-patentes 2½ mm. longi; sepala inaequalia oblonga vel ovata 1-1½ mm. longa dorso plus minus hirsuta apice rotundata vel acuta; petala 5 glabra inaequalia oblongo-linearia vel oblonga 2 mm. longa

$\frac{1}{2}$ -1 mm. lata apice acuta vel obtusa integra vel minute erosa erecto-patentia; staminodia nulla; ovarium ovoideum  $\frac{2}{3}$  mm. longum apice ad stylum 1 mm. longum aterns; stylus columniformis glaber apice breve 3-lobatus, lobis plus minus recurvis. Fructus obovoideus 2- $2\frac{1}{2}$  mm. longus glaber abortu 2-spermus; semina irregulariter oblonga vel rotundata 1- $1\frac{1}{3}$  mm. longa rubescens elegante minuteque reticulata.

HAB. Arisan, leg. B. HAYATA et S. SASAKI, Jan. 1912.

Near *Eurya japonica* THUNB.; but differs from it in the much smaller, thinner and acuter leaves.

**Eurya Matsudai** HAYATA sp. nov. (Fig. 5). Frutex. Ramii et ramuli gracillimi subrecti subglabri. Folia alterna chartacea lanceolata vel oblongo-lanceolata 7-8 cm. longa 2- $2\frac{1}{2}$  cm. lata apice caudato-acuminata basi obtusa margine serrulata utraque pagine glabra, costa supra impressa subtus prominente elevata, venis venuisque utraque pagine tenuiter elevatis, petiolis 2-3 mm. longis glabris. Flores ad axillas foliorum fasciculati, pedicellis 2 mm. longis minute hirsutis apice infra calycem bracteis duabus minutis instructis. Fl. ♂: sepala 4-6, imbricata oblongo-triangularia  $1\frac{1}{2}$  mm. longa  $1\frac{1}{2}$  mm. lata apice obtusa breve apiculata intus glabra dorso extus minute villosa margine integra minute ciliolata; petala 5, obovato-oblonga 4 mm. longa  $1\frac{2}{3}$  mm. lata apice rotundata breve apiculata

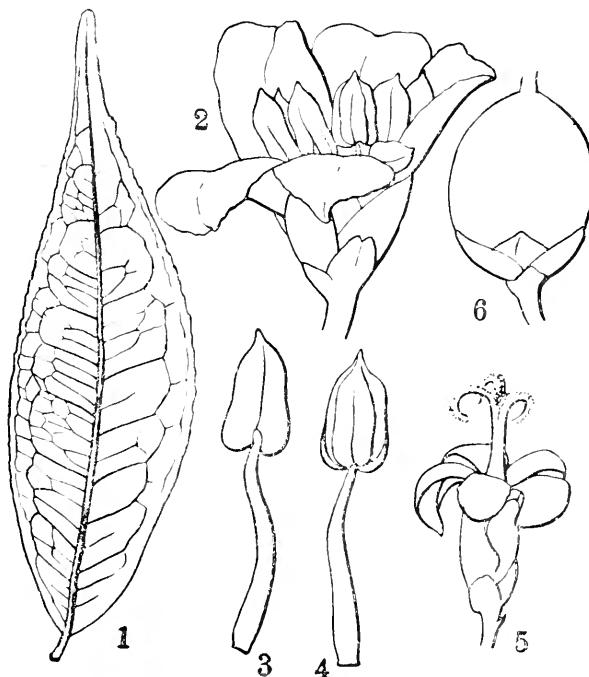


Fig. 5; *Eurya Matsudai* HAYATA; 1, a leaf; 2, a male flower; 3, 4, a stamen, seen from different sides; 5, a female flower; 6, an immature fruit.

basi angustata basi connata glabra; stamina 9–10 basi petali affixa, filamentis glabris filiformibus 2 mm. longis, antheris ovatis 1 mm. longis apice aristato-apiculatis basi truncatis cordatis; ovarii rudimentum nullum. Fl. ♀: minores quam fl. ♂, tubulos-patentes 3 mm. longi; sepala imbricata inaequalia oblonga vel triangulari-ovata 2 mm. longa; petala 5, lineari-oblonga basi deorsum connata  $2\frac{1}{2}$ –3 mm. longa apice acuta margine integra vel minute erosa; ovarium glabrum ovoidatum 1 mm. longum  $\frac{3}{4}$  mm. latum, stylo  $1\frac{1}{2}$  mm. longo columniformi glabro apice 3-fido. Fructus ovoides 4 mm. longus 3 mm. latus minute muricatus vel sublaevis  $\infty$ -spermus; semina minute numerosissima oblonga angulata 1 mm. longa minute reticulata.

HAB. Daibusan, leg. Y. MATSUDA, Nov. 1918. (Fl. et fr.)

Near *Eurya aristensis* HAY.; but differs from it in having leaves which have finely elevated veinlet on the upper surface.

### *Camellia* LINN.

**Camellia theifera** (GRIFF.) DYER; COHEN STUART Voorbereidende onderzoeken ten dienste van de selektie der theeplant p. 107, var. **assamica** (MASTERS). *Thea chinensis* HAYATA Gen. Ind. p. 8. pro parte (non SIMS.)

HAB. Suisha.

### Dilleniaceæ.

#### *Actinidia* LINDL.

**Actinidia gnaphalocarpa** HAYATA sp. nov. Frutex scandentissimus; rami glabri, ramulis sursum rubro-fusco-tomentosis. Folia alterna chartacea oblongo-ovata 10–14 cm. longa 6–8 cm. lata apice cuspidato-acuminata basi rotunda marginé subintegra vel remote mucronibus instructa supra glabra subtus stellato-tomentosa, costis venis venulisque supra impressis subtus prominente elevatis, petiolis 3–4 cm. longis. Flores ignoti. Cymæ fructiferae axillares, pedunculis 6–7 cm. longis; fructus oblongo-globosus fulvo-tomentosus.

*Actinidia Champtoni* HAYATA Gen. Ind. p. 47, (non BENTH.)

HAB. Uraisha, Suisha.

Closely allied to *A. Champtoni* BENTH., to which it was formerly referred

by myself and others. But, in comparing it with the latter species which I had an opportunity to collect in Hongkong in the summer, 1917, I have found that they are quite different. The leaves of the Formosan plant are much more tomentose beneath than those of the Hongkong. The transverse veinlets of the former are reddish, while those of the latter are not colored.

## Sterculiaceæ.

### *Reevesia* LINDL.

**Reevesia formosana** HAYATA sp. nov. Arborescens; ramis validibus cinerascentibus. Folia alterna lanceolata vel oblanceolata tenuiter coriacea vel chartacea 7-9 cm. longa 2 $\frac{1}{2}$ -3 cm. lata apice obtusa basi cuneata margine subintegra utraque pagina subglabra, costis venis venulisque utraque pagina elevatis, petiolis 1 $\frac{1}{2}$ -2 cm. longis glabris. Flores ignoti. Fructus versus apicem 2-3-dispositi capsulares 5-carpellares lignosi semiglobosi, in sectione longitudinali obcordati 2 $\frac{1}{2}$  cm. longi totiusque lati profunde 5-sulcati et lobati, septicide et loculicide deliscentes; semina in quoque loculo 2 ab apice loculi pendula obovata 7 mm. longa superposita longe lateque alata, cum alis cultriformia cum alis circ. 2 cm. longa; testa cartilaginea basi et latere ad alam producta; albumen copiosum; embryo magnus toto cavo seminum extensus; cotyledones foliosæ, radicula infera.

HAB. Hiiranzan, leg. B. HAYATA et S. SASAKI, Juli. 1912.

Somewhat comparable to *R. thyrsoides* LINDL., *R. Wallchii* BR. and *R. pubescens* MAST.; but differs from them by the leaves which are cuneate or acute at the base. The leaves of the other species are more or less rounded at the base.

## Rutaceæ.

### *Phellodendron* RUPR.

**Phellodendron Wilsonii** HAYATA et KANEHIRA sp. nov. Arbor; ramuli teretes glabri lenticellis minutis conspersi. Folia opposita pinnata in ambitu oblonga cum petiolis 27 cm. longa 15 cm. lata imparipinnata, pinnis 4-5-jugis, jugis a se 4 cm. remotis, pinnis mediis majoribus plus minus obliquis

ovato-oblongis 9 cm. longis 4 cm. latis apice acuminatis basi oblique truncatis margine minute crenulatis vel subintegris chartaceis utraque pagine subglabris, subtus pallidissimis, costis venis venulis supra minus subtus plus elevatis, subtus ad costas dense hirsutis; petiolulis 4 mm. longis; pinna terminali ovato-oblonga, petiolulis 2 cm. longis; rhachibus foliorum hirsutis; petiolis communibus 4 cm. longis. Cymæ fructiferæ terminales 8 cm. longæ totiusque latae; fructibus globosis in exsiccato nigricantibus 7 mm. longis laccatis 5-cocca, Coecis cartilagineis oblongis complanatis  $5\frac{1}{2}$  mm. longis  $2\frac{1}{2}$  mm. latis 2-valvatim dehiscentibus 1-spermis. Semina semi-oblonga  $4\frac{1}{2}$  mm. longa  $2\frac{1}{2}$  mm. lata complanata nigricantia impresso-reticulata.

HAB. Mt. Arisan, leg. R. KANEHIRA et S. SASAKI, Oct. 1918.

Very near *Phellodendron amurense*, but distinguishable from it in having much smaller leaves.

### Celastrineæ.

#### *Euonymus* LINN.

***Euonymus acutorhombifolia* HAYATA** (Fig. 6) Ie. Pl. Formos. V. p. 56. Descriptio aueta:—Frutex; ramis et ramulis gracilibus tetragonis ad angulos acutis glabris. Folia opposita tenuiter coriacea oblongo-rhomboidea  $5\frac{1}{2}$ –8 cm. longa 2–3 cm. lata apice acuminata ad summum obtusa basi cuneata margine supra medio serrata utraque pagine glaberrima, costis venis venulisque utraque pagine tenuiter graciliter elevatis, petiolis 2 mm. longis. Capsula 4-carpellaris, carpellis sterilibus rotundatis latere complanatis 1 cm. latis et longis alaeformibus, carpellis fertilibus 1-spermis rotundatis 7 mm. longis 5 mm. latis apice rotundatis plus minus complanatis; semina oblonga latere plus minus complanata 7 mm. longa 6 mm. lata apice carunculis (vel arillis) oblongis 5 mm. longis carnosis obtecta; testa membranacea rubra; albumine carnosso copioso; embryo centralis; cotyledones foliosæ cordatae 4 mm. longæ, radicula  $1\frac{1}{2}$  mm. longa.

HAB. Ōchōbi, leg. B. HAYATA, Mai. 1916; Daibusan, leg. Y. MATSUDA, Jan. 1917, (fructus!).

NOTE: Petals 4, yellowish brown; ovary reddish.



Fig. 6; *Euonymus acutiorhombifolius* HAYATA; 1, a branch; 2, a flower; 3, the same, seen from back; 4, a petal; 5, a dehiscent capsule, a seed seen; 6, a seed with an aril; 7, the same, aril taken off; 8, section of the same, embryo seen.

***Euonymus batakensis* HAYATA sp. nov.** (Fig. 7). Frutex, ramis et ramiculis rectis, ramiculis tetragonis tenuiter vel haud alatis glaberrinis. Folia opposita chartacea vel tenuiter coriacea oblonga obovata vel lanceolata 5-6 cm. longa 2½-3 cm. lata apice obtusa acuta vel acuminata basi acuta margine crenulato-serrulata utraque glaberrima, costis et venis supra distinetè elevatis

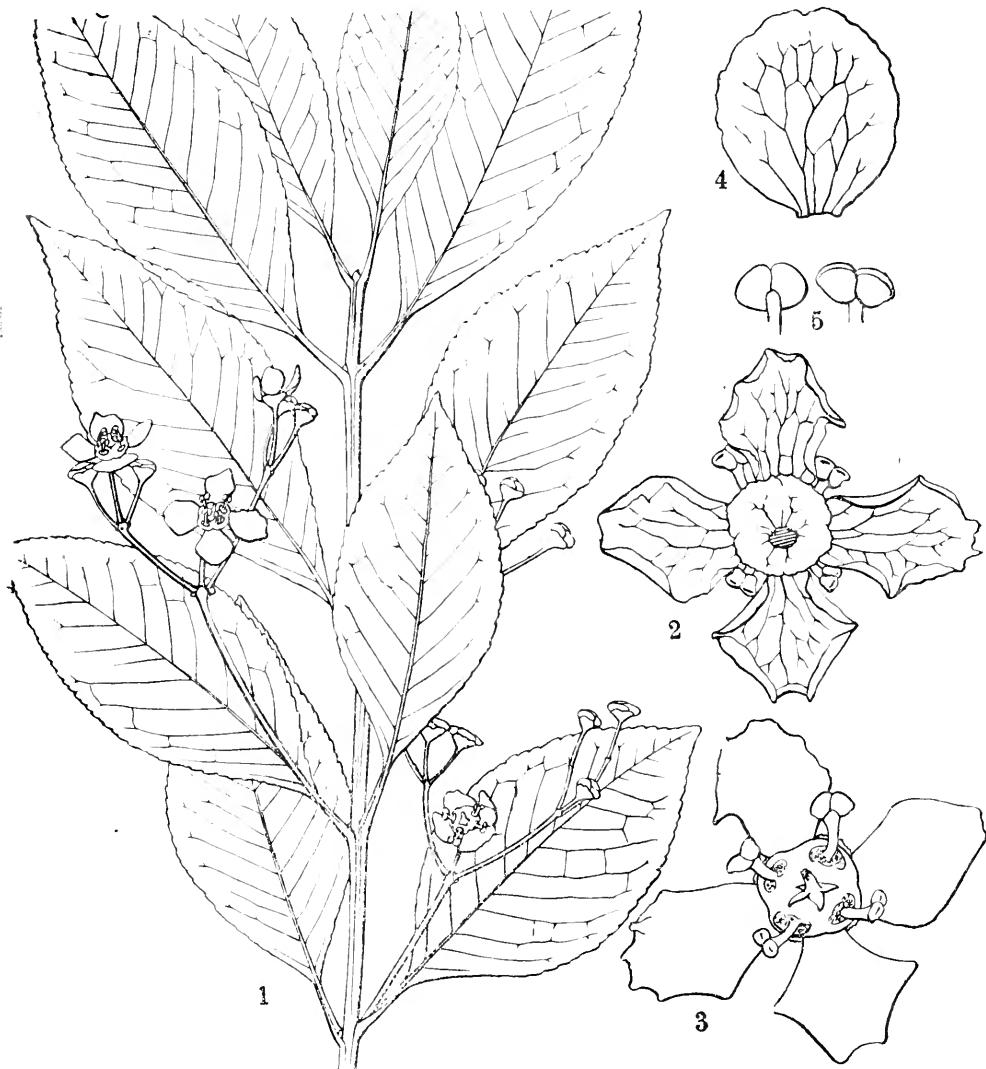


Fig. 7; *Euonymus batakensis* HAYATA; 1, a branch; 2, a flower, seen from back; 3, the same, seen from front; 4, a petal; 5, a stamen, seen from different sides.

gracillimus, petiolis 5–10 mm. longis plus minus alatis. Cymæ axillares longe pedunculatae, pedunculis 5 cm. longis, ramosæ, pedicellis 1 em. longis. Calyx rotundatus planus 5 mm. in diametro margine denticulatus 4-lobatus, lobis fere obsoletis. Petala 4 rotundato-oblonga 6 mm. longa 5½ mm. lata apice rotundata basi plus minus contracta margine integra vel erosa. Stamina 4 intra discum disposita, filamentis brevibus 2 mm. longis glabris, antheris obreniformibus 1½ mm. latis ⅔ mm. longis. Discus planus laevis. Ovarium tetragono-conicum brevissimum, stylo 1½ mm. longo.

*Euonymus Tanakae* HAYATA Gen. Ind. p. 14. (pro parte) (non MAXIM.)

HAB. Inter Shingiō et Batakan leg. B. HAYATA et S. SASAKI, Aprili. 1917.

This is closely allied to *Euonymus Tanakae* MAXIM.; but differs from it in the much slenderer branches, smaller and thinner leaves, and in the much slenderer axillary cymes. The cymes of the new species are solitary and axillary along the branches from the base to the top of young shoots, while those of *E. Tanake* are only on the apex and nearly so congested as they would be better described as “quasiterminal.”

***Euonymus kuraruensis*** HAYATA sp. nov. (Fig. 8). Frutex ramosissimus, ramulis glabris. Folia opposita obovata vel -ovata 4½ cm. longa 3 cm. lata apice obtusa vel obtusissima basi cuneata vel obtusa margine remote serrulata vel crenata coriacea utraque glaberrima, costis supra acute elevatis subtus planis haud vel vix elevatis; petiolis 5 mm. longis; folia minora 3 cm. longa 2 cm. lata. Cymæ axillares vel subterminales longe pedunculatis paucifloratis, pedicellis 2 mm. longis. Calyx glaber planus 4 mm. in diametro 4-partitus, sepalis rotundatis 2 mm. longis 2½ mm. latis apice truncatis vel rotundatis margine integris. Petala 4 rotundata 4½ mm. longa totiusque lata margine integra vel obscure crenulata apice rotundata basi valde contracta margine exteriore recurvata valde convoluta. Stamina 4, filamentis valde recurvis 3 mm. longis apice subulatis, antheris cordato-rotundatis 1 mm. longis totiusque latis fere 2-partitis apice rotundatis vel emarginatis versatilibus. Ovarium depresso-conicum echinatum, stylo columniformi 2½ mm. longo apice acuto.

HAB. Kuraru, leg. B. HAYATA, Juni. 1912; Raisha, leg. Y. MATSUDA, Juli. 1915.

Near *E. Spraguei* HAY.; but differs from it in the obovate obtuse leaves with much thicker texture.

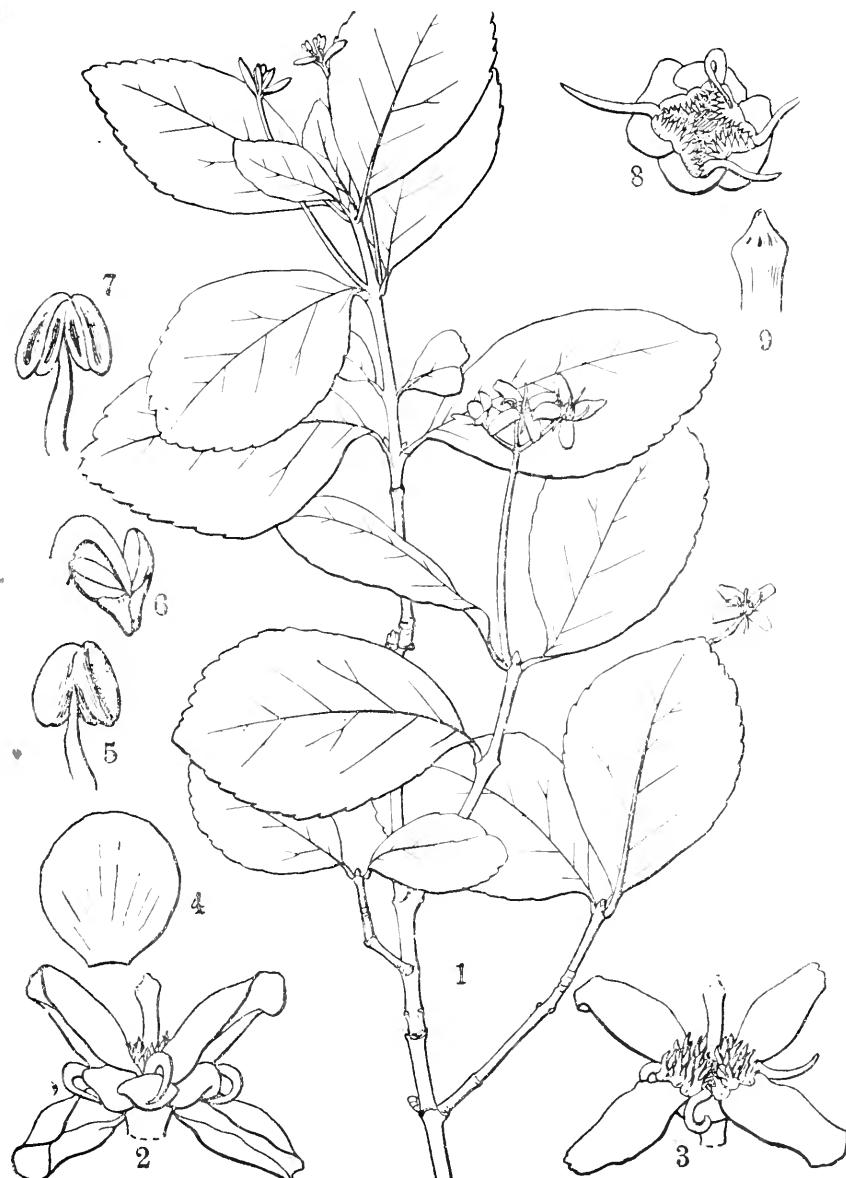


Fig. 8; *Evonymus kuraruensis* HAYATA; 1, a branch; 2, 3, flowers; 4, a petal; 5, 6, 7, stamens, seen from different sides; 8, a flower, petals and style taken off; 9, a style.



Fig. 9; *Euonymus Matsudai* HAYATA; 1, a branch; 2, a flower, petals taken off; 3, a petal; 4, a stamen.

**Euonymus Matsudai** HAYATA (Fig. 9). Frutex, rami et ramuli graciles glabri tetragoni. Folia opposita chartacea oblongo-lanceolata 10–12 cm. longa 3½–4½ cm. lata apice acuminata ad summum obtusa basi trianguli-acuta margine integræ utraque pagine glabra supra opacissima subtus subnitida (in exsiccato), venis venulis supra subimpressis subtus elevatis, petiolis 7 mm. longis glabris. Cymæ terminales 1 cm. longæ panic-floratæ, bracteolis duabus lanceolatis serrulatis, pedicellis 3–4 mm. longis. Calyx glaber patens 7 mm. in diametro 4-lobatus, lobis latissimis brevissimis 1½ mm. longis 3½ mm. latis late rotundatis margine minute crenulatis. Petala 4, late obovato-rotundata, 5–6 mm. longa 6 mm. lata apice rotundata basi contracta utraque glabra margine erosa vel lacera. Stamina 4, antheris sessilibus vel brevissime stipitatis obreniformibus ½ mm. longis 1¼ mm. latis glabris. Discus subplanus quadrati-formis 3½ mm. in diametro toto cum cupula calycis connatus glaber margine tenuissime 4-lobatus. Ovarium brevissimum tetragono-pyramidalis 2 mm. latum 1½ mm. longum.

HAB. Daibuzan, ad 8000 ped. alt. leg. Y. MATSUDA, Mai. 1918.

Differs from all the species of the genus in Formosa, in the leaves which are very dull on the upper side, but rather shining on the under surface, in dried specimens.

**Euonymus pellucidifolius** HAYATA Ic. Pl. Formos. V. p. 57, t. X.

This is very near to *E. longifolius* CHAMP., which I collected in Hongkong in the summer, 1917. The latter plant has the much longer and narrower leaves.

### Celastrus LINN.

**Celastrus Hindsii** BENTH.; FORBES et H. MSL. Ind. Fl. Sin. I. p. 123; *C. monospermus* BENTH. Fl. Hongk. p. 63; DUNN et TUTCHER Fl. Hongk. et Kwangt. p. 62.

HAB. Daibuzan, leg. Y. MATSUDA.

Identical with the Hongkong plant collected by myself in the summer, 1917.

**Celastrus patentiflorus** HAYATA sp. nov. (Fig. 10). Scandens, rami rugosissimi lenticellati glabri. Folia primum membranacea alterna obovato-

oblonga 13 cm. longa 6–7 cm. lata apice rotundata sed centrum breve caudata,

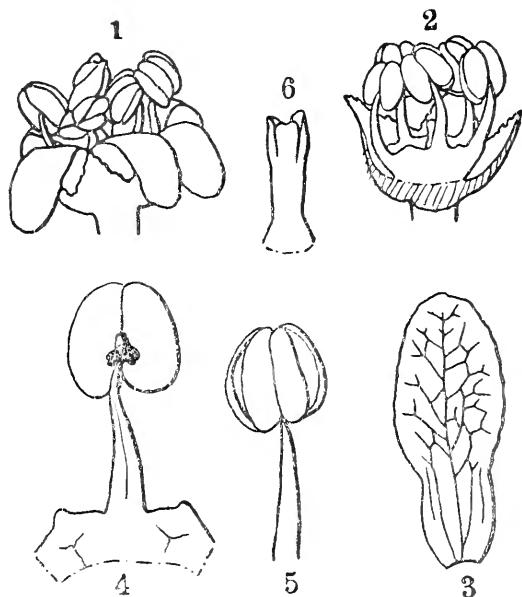


Fig. 10; *Celastrus patentiflorus* HAYATA;  
1, a flower; 2, the same, petals taken off; 3, a  
petal; 4, a stamen on the disc; 5, another  
stamen seen from a different side; 6, rudimen-  
tary ovary.

2 mm. longus ad medium 5-lobatus, lobis triangulari-oblongis  $1\frac{1}{2}$  mm. longis  
totiusque latis apice obtusissimis minute denticulato-ciliolatis glabris erectis.  
**Petala** 5 patentissima reflexo-recurva elongato-oblongo-linearia  $4\frac{1}{2}$ –5 mm.  
longa 2 mm. lata apice obtusissima basi angustata glabra margine minute  
denticulata. **Stamina** 5, filamentis incrassatis glaberrimis apice subulatis  $2\frac{1}{2}$   
mm. longis, antheris cordato-reniformibus  $1\frac{1}{4}$  mm. latis 1 mm. longis apice  
obtusis basi profunde 2-lobatis dorso basi medio glandulis 1–2 fuscentibus  
punctatis. **Discus** late cupuliformis 2 mm. in diametro margine erosus stamini-  
fer. **Ovarium** (rudimentum?) columniforme glabrum 2 mm. longum apice  
3-lobatum.

HAB. Kiuhabon, leg. B. HAYATA, Aprili. 1916.

Near *C. Kusanoi* HAY.; but differs from it in having much patent flowers  
with quite glabrous filaments and in the leaves which are cuneate or acute

candidis triangularibus 8–10 mm.  
longis basi 4–5 mm. latis, basi  
acuta margine remote serrulata  
utraque pagine glaberrima,  
costis venis venulisque utraque  
pagine minute reticulat's ele-  
vatis, petiolis  $1\frac{1}{2}$  cm. longis.  
Racemi paniculati axillares vel  
laterales 3–4 cm. longi 2–3  
cm. lati glabri, pedunculis  
complanatis glabris, floribus  
ad apicem ramorum umbellati-  
tim dispositis, pedicellis ultimi-  
mis 5 mm. longis teretibus  
basi bracteis minutis subulatis  
fimbriatis 1 mm. longis in-  
structis, pedicellis ad medium  
articulatis. Calyx late cam-  
panulatus  $3\frac{1}{2}$  mm. in diametro

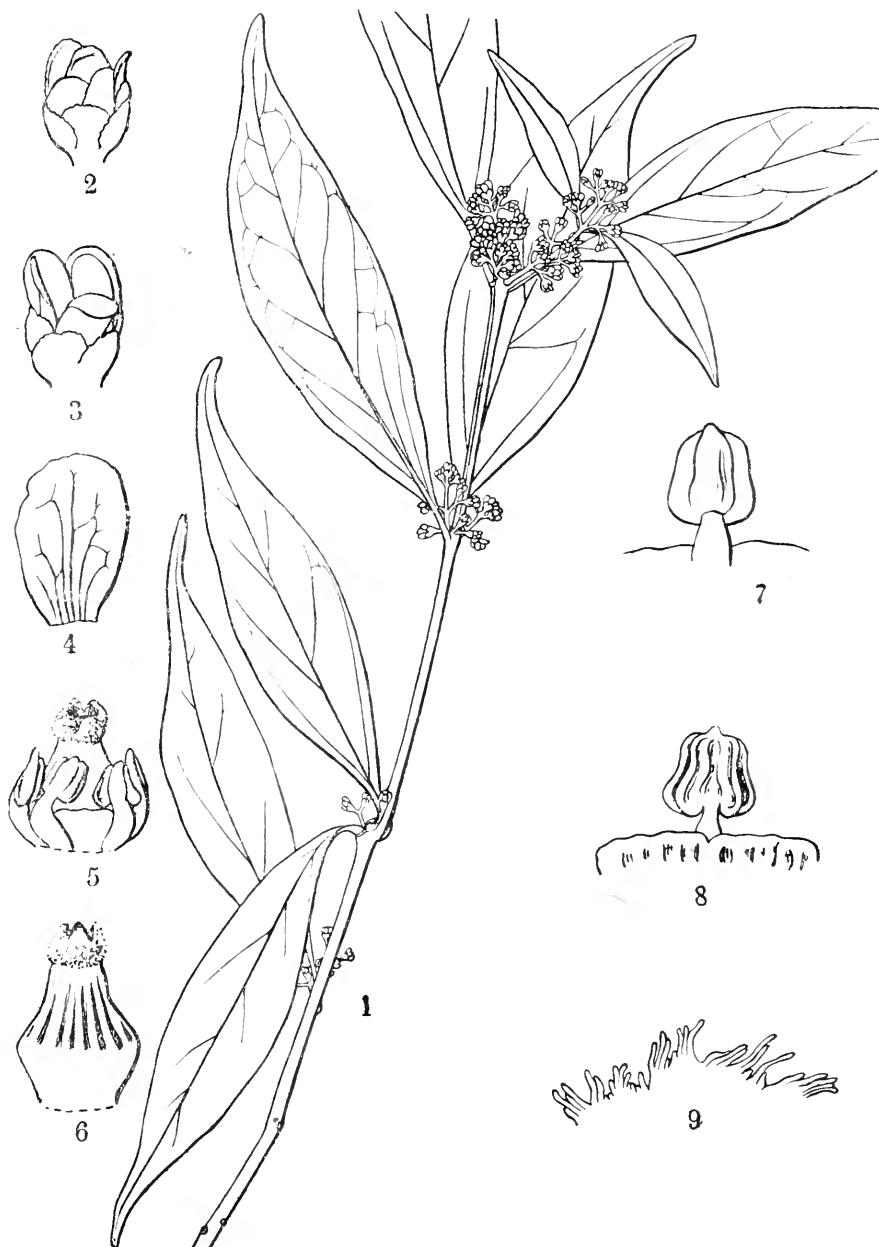


Fig. 11; *Cassine Matsudai* HAYATA; 1, a branch; 2, 3, flowers; 4, a petal; 5, ovary and stamens; 6, ovary; 7, 8, a stamen on a disc, seen from different sides; 9, a marginal portion of a sepal.

at the base. The flowers of *C. Kusanoi* are half-closed, the filaments are slightly and shortly hairy, and the leaves are rather rounded at the base.

NOTE: Leaves dark-green shining above; flowers beautifully pale fresh green; anthers yellow.

### *Cassine* LINN.

**Cassine Matsudai** HAYATA sp. nov. (Fig. 11). Frutex; rami et ramuli graciles tetragonii glabri. Folia opposita lanceolata 7-8 cm. longa  $1\frac{1}{2}$ - $2\frac{1}{2}$  cm. lata apice acuminata vel caudato-acuminata basi cuneato-acuminata integra costa supra elevata, venis venulis supra haud sultus tenuissime elevatis, utraque pagine glaberrima, petiolis 5 mm. longis. Cymæ  $1\frac{1}{2}$  cm. longæ ad axillas dense fasciculatae glabrae, floribus oppositis, pedicellis ultimis  $1\frac{1}{2}$  mm. longis glabris, bracteis crassiuseulis triangularibus 1 mm. longis apice acutis margine denticulatis fulvo-marginatis, bracteolis oppositis 2 bracteæ conformibus. Sepala 5, subæqualia late rotundata 1 mm. longa  $1\frac{1}{2}$  mm. lata margine fimbriato-ciliolata fulvo-marginata glabra. Petala 5 oblonga  $1\frac{3}{4}$  mm. longa  $\frac{1}{4}$  mm. lata apice rotundata basi haud vel vix contracta glabra. Stamina 5, margine disci affixa, filamentis brevibus  $\frac{1}{6}$  mm. longis, antheris rotundatis apiculatis  $\frac{1}{4}$  mm. longis. Ovarium conico-ovoideum glabrum  $1\frac{1}{2}$  mm. longum  $\frac{2}{3}$  mm. latum, stigmata digitiforme 4-partita. Discus annularis lamelliformis 5-lobatus  $\frac{1}{3}$  mm. altus.

*Otherodendron Matsudai* HAYATA, in Herb. Taihoku.

HAB. Buizan, leg. Y. MATSUDA, Jan. 1919.

Near *Cassine micrantha* HAYATA, but differs from it in the much thinner leaves with the lateral veins arranged in a much acuter angle.

### Leguminosæ.

#### *Crotalaria* DILL.

**Crotalaria akoensis** HAYATA sp. nov. (Fig. 12). Suffrutex erectus; caulis 10-40 cm. longus in exsiccato fuscens fulvo-hirsutus teres foliatus. Folia alterna simplicia oblonga vel oblongo-lanceolata 2-4 cm. longa 12 mm. lata apice acuta obtusa integra supra in exsiccato fuscissima utraque pagine adpresso hirsuta, petiolis 3 mm. longis fulvo-hirsutis, stipulis nullis? Flores

breve racemosi, racemis terminalibus prænodiis, pedicellis 4 mm. longis dense strigoso-hirsutis, bracteolis duabus basi calycis dispositis linearibus 8 mm. longis 1 mm. latis acuminatis. Calyx campanulatus 1 cm. longus 1 cm. latus extus strigoso-fulvo-hirsutus intus glaber supra basin sursum 5-lobatus, lobis lateralibus linearibus 10 mm. longis 2-3 mm. latis acuminatis linearibus vel oblongo-linearibus. Petala 5: vexillum obovato-rotundatum 9 mm. longum 7-8 mm. latum apice emarginatum basi breve unguiculatum prope basin 1-appendiculatum, ungue 1 mm. longo totiusque lato; alae obovato-oblongæ 7 mm. longe 3½ mm. latæ apice obtusissimæ basi breve unguiculatæ, unguibus 1½ mm. longis ⅔ mm. latis; carina elongato-oblongo-triangulares 8 mm. longæ 4 mm. latæ apice attenuato-rostrata ad sumnum obtuse basi late triangulari acutæ breve unguiculatæ, unguibus 1 mm. longis ⅔ mm. latis, ad marginem lateris superioris eroso-ciliatae. Stamina diadelpha, antheris linearibus 1 mm. longis. Ovarium oblongo-lineare 3 mm. longum 1 mm. latum apice declinatum rostratum valde complanatum basi obtusum glabrum, stylo basi subito reflexo-ascendenti, parte ascendenti erecta recta apice et latere interiore dense hirsuta. Legumen cartilagineum obovoideo-ellipsoideum 13 mm. longum 6 mm. latum glabrum sutura superiore dehiscent.

HAB. Akōchō: Naiho, leg. Y. MATSUDA, Sept. 1915.

Near *C. ferruginea* GRAH.; but differs from it by the much shorter pods.

### *Indigofera* LINN.

***Indigofera formosana*** MATSUMURA Conspect. Legumin. p. 8.

*Indigofera macrostachya* HAYATA (non VENT) Gen. Ind. Fl. Formos. p. 20. Remarkable for the very long racemes.

***Indigofera mansuensis*** HAYATA sp. nov. (Fig. 13). Frutex, rami et rami flexuosi fusco-purpurascentes tretes. Folia alterna impari-pinnata in ambitu linearia 8-9 cm. longa 2½-3 cm. latæ, pinnis lateralibus 6-7-jugis oppositis a se 5-7 mm. remotis ellipticis vel obovato-ellipticis inferioribus

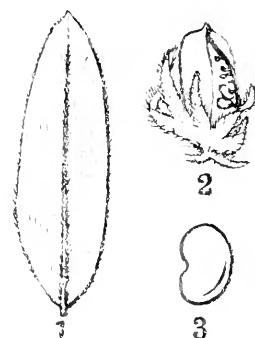


Fig. 12; *Crotalaria akonisii* HAYATA; 1, a leaf; 2, a pod with the calyx; 3, a seed.

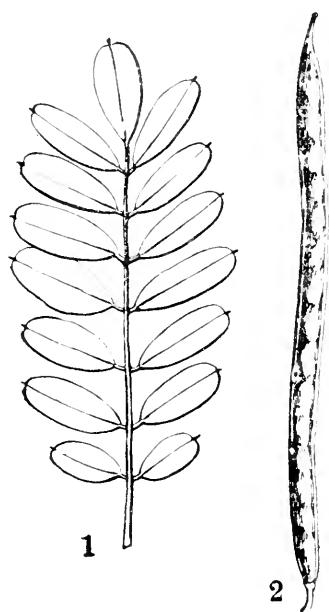
minoribus superioribus majoribus  $1\frac{1}{2}$  cm. longis 5–6 mm. latis apice rotundatis ad centrum summi breve aristatis basi obtusis vel cuneato-obtusis marginæ integris utraque page tenuiter adpresso hirsutis, subtus adpresso glanduloso-punctatis, petiolulis  $1\frac{1}{2}$  mm. longis, stipellis subulatis 1 mm. longis, pinna terminali majore  $1\frac{1}{2}$  cm. longa 7–8 mm. lata; interjugiis 6–7 mm. longis adpresso hirsutis semi-teretibus supra late sulcatis, petiolis communibus 1 cm. longis, stipulis subulato-triangularibus 2 mm. longis. Flores ignoti. Legumen lineare 6–7 cm. longum 3 mm. latum plus minus complanatum apice longe rostratum utroque latere costulatum facie subplanum adpresso tenuiter hirsutum basi obtusum, pedicellis 4 mm. longis. Semina ignota.

HAB. Akō, Mansu, leg. Y. MATSUDA, Mai. 1916.

Near *Indigofera tinctoria* LINN.; but differs from it in the much longer straight pods.

Fig. 13; *Indigofera mansuensis* HAYATA; 1, a leaf; 2, a pod.

**Indigofera venulosa** CHAMP. var. **glaucă** HAYATA n. v. Frutex 20–30 cm. longus ramosissimus, ramis et ramicibus gracilibus glaucis plus minus flexuosis angulatis. Folia pinnata in ambitu linearia imparipinnata, pinnis lateralibus oppositis 7-jugis subconformibus ovato-oblongis 18 mm. longis 10 mm. latis obtusis ad summum breve aristatis basi obtusis integris supra glabris in exsiccati fuscentibus subtus glaucis adpresso hirsutis, stipellis minutis subulatis  $\frac{1}{2}$  mm. longis, rhachibus inter jugos 1 cm. longis, petiolis communibus 1 cm. longis, stipulis lineari-lanceolatis 4 mm. longis. Racemi terminales simplices vel axillares 10–15 cm. longi dense floriferi, pedicellis 2 mm. longis. Calyx late campanulatus 2 mm. longus 4 mm. latus tenuiter hirsutus apice 5-lobatus, lobis triangularibus inaequalibus acutis. Petala 5: vexillum ellipticum 12 mm. longum 8 mm. latum apice truncatum plus minus emarginatum basi truncato-triangulari-acutum margine minutissime hirsutum extus minuto



hirsutum intus glabrum; alæ lineares 12 mm. longæ 2½ mm. latae plus minus recurvæ apice obtuse deorsum plus minus hirsutæ basi acutæ; carinæ cultiformes 14 mm. longæ 4 mm. latae apice obtusæ ad marginem et prope marginem hirsutæ basi cuneatæ prope basin e facie exteriore gibboso-appendiculatae. Stamina diadelpha, antheris ovato-oblongis 1 mm. longis ¾ mm. latis apice appendiculatis basi emarginatis apice basique barbatis. Ovarium lineare 10 mm. longum ¼ mm. latum, stylo superne recurvo 3–4 mm. longo glabro apice capiculato. Legumen fuso-purpurascens lineare 5 cm. longum 3–4 mm. latum glabrum latere complanatum. Semina ignota.

HAB. Tochikoan, Daifōsei, Holisha, Ritōzan.

Near the type; but differs from it in having much smaller leaves which are very glaucous on the under side.

### *Tephrosia* PERS.

**Tephrosia ionophlebia** HAYATA sp. nov. Suffrutex ramosissimus, rami et ramuli pallido-flavescentes tenuiter pubescentes flexuosi foliati. Folia alterna imparipinnata in ambitu linearis-oblonga 6–8 cm. longa 2½ cm. lata, pinnis lateralibus 9–10 jugis oppositis, mediis majoribus obovato-linearibus 18 mm. longis 5 mm. latis apice obtusissimis mucronatis basi gradatim obtuso-cuneatis margine integris supra subglabris subtus dense patente breveque hirsutis, costis venis venulisque purpureo-coloratis, petiolulis 1–2 mm. longis dense hirsutis, stipellis nullis, interjugiis 5 mm. longis, petiolis communibus 13 mm. longis dense hirsutis, stipulis linearibus 5–6 mm. longis 1 mm. latis apice acuminatis extus hirsutis intus glabris. Racemi terminales folio breviores erecti 4–5 cm. longi hirsuti, floribus ad nodos fasciculatum dispositis, fasciculis 5–7-floratis basi bracteatis, bracteis linearibus 5–6 mm. longis hirsutis, bracteolis minutis, pedicellis florum gracilibus 4 mm. longis hirsutis. Calyx campanulatus 3 mm. longus totiusque latus medio sursum 5-lobatus, lobis superioribus usque ad medium connatis, lateralibus cuspidato-triangularibus 2 mm. longis 1 mm. latis apice cuspidatis extus dense intus tenuiter hirsutis. Petala 5: vexillum 8 mm. longum (cum ungue) 8 mm. latum late rotundatum apice emarginatum basi late unguiculatum, ungue obtriangulari 2 mm. longo 2 mm. lato basi acuto, intus glabrum extus hirsutum: alæ late

lineares 7 mm. longæ (unguibus exceptis) 2-3 mm. latae apice obtuso-truncatae, basi unguiculatae, unguibus  $2\frac{1}{2}$  mm. longis  $\frac{1}{2}$  mm. latis glabrae; carinae (unguibus exceptis) ovatae  $3\frac{1}{2}$  mm. longe  $2\frac{1}{2}$  mm. latae apice acute basi oblique ad ungnem abeuntes, unguibus linearibus 3 mm. longis  $\frac{1}{3}$  mm. latis. Stamina diadelpha, tubo superne minute appendiculato, antheris oblongis  $\frac{1}{2}$  mm. longis. Ovarium lineare 3 mm. longum  $\frac{1}{2}$  mm. latum basi hirsutum sursum glabrum apice a 1 stylum albens, stylo valde latere complanato 3 mm. longo glabro apice pumetiformi. Legumen lineare 4 cm. longum 4 mm. latum apice acutum.

HAB. Tōseikaku, Pinan.

Near *Tephrosia purpurea*; but differs from it in the leaves which are purple colored on the under side, and are dispersed with rather spreading hairs. In *T. purpurea*, the leaves are pale on the under surface and are dispersed with very adpressed hairs.

### *Dumasia* DC.

**Dumasia bicolor** HAYATA (Pl. I.) Fl. Mont. Formos. p 75. Descriptio aucta:—Legumen supra calycem breve stipitatum, stipite 2 mm. longo, globoso-fusiforme basi apiceque acutum, valvis coriaceis facie minute villoso-hirsutis, 1-2 cm. longum 8 mm. latum 1-2 spernum. Semina globosa  $5\frac{1}{2}$  mm. longa  $4\frac{1}{2}$  mm. lata nitida primum glanca fuscentia.

HAB. Arisan, leg. B. HAYATA.

### *Millettia* W. et ARX.

**Millettia taiwaniana** (MATSUM.) (Pl. II.) HAYATA n. n. Descriptio aucta:—Racemi simplices vel paniculati 10-20 cm. longi, fulvo-tomentosi, floribus ad nodos 2-3-fasciculatim dispositis, rhachis fasciculorum nodiformi, bractea basi nodi insita triangulari 2 mm. longa  $1\frac{1}{2}$  mm. lata apice acuta intus glabra extus hirsuta; bracteolis duabus ad basin calyeis insitis  $1\frac{1}{2}$  mm. longis ovatis obtusis, pedicellis 4 mm. longis hirsutis. Calyx globoso-campanulatus 5-6 mm. longus 7-8 mm. latius extus breve hirsutus crassiusculus intus glaber margine late 5-dentatus. Petala 5: vexillum obovato-oblongum 2 cm. longum  $1\frac{1}{2}$  em. latum apice emarginatum basi breve unguiculatum, ungue 3 mm. longo  $1\frac{1}{2}$  mm. lato, prope apicem ad marginem hirsutum caeterum glab-

rum; alæ oblongo-lineares cum ungue 18 mm. longæ 6 mm. latæ apice obtusæ basi longe unguiculatæ, ungue 5–6 mm. longo 1 mm. lato; carinae obovato-cultriformes cum ungue 2 cm. longæ apice obtusæ basi longe unguiculatæ, unguibus 5 mm. longis 1 mm. latis, sursum prope apicem ad marginem dense hirsutæ. Stamina monadelpha, antheris ovato-oblongis 1½ mm. longis 1 mm. latis apice obtusis basi 2-lobatis. Ovarium 5–6 mm. longum lineare 2 mm. latum dense fulvo-hirsutum apice gradatim ad stylum aubeuns, stylo 10–12 mm. longo deorsum hirsuto apice oblique truncato stigmatifero.

*Millettia pachycarpa* HAYATA Gen. Ind. Fl. Formos. p. 21 (non BENTH.)

*Pongamia taiwaniana* HAYATA Ic. Pl. Formos. III. p. 79.

*Derris taiwaniana* MATSUM. in Sched. Herb. Tōkyō.

HAB. Shinjō, Kauiran, Toseikaku, Sankakuyū.

Differs from *Millettia pachycarpa* BENTH., in the always 1-seeded ovoid pods.

### *Desmodium* DESV.

**Desmodium akoense** HAYATA sp. nov. (Fig. 14). Basi suffrutescens haud volubilis. Caulis gracillimus tetragonus tenuiter hirsutus. Folia 3-foliata, foliolo terminali obovato-oblongo vel oblongo vel lanceolato 2–2½ cm. longo 1–1½ cm. lato integro apice obtusissimo vel rotundato ad centrum minute mucronato basi obtusissimo membranaceo supra subtusque depresso-hirsuto subtus glauco, foliolis lateralibus minoribus, petiolulis 1½ mm. longis tomentosis, stipellis 1 mm. longis subulatis, petiolis communibus 1–1½ cm. longis hirsutis, stipulis triangulari-lanceolatis 2 mm. longis obliquissimis strigoso-hirsutis. Racemi simplices vel paniculati terminales vel axillares laxe florati, floribus fasciculatis, fasciculis basi 1-bracteatis, bracteis ovato-lanceolatis 2 mm. longis ½ mm. latis strigoso-hirsutis, bracteolis lanceolatis 1 mm. longis, pedicellis 2–3 mm. longis. Calyx late obconico-campanulatus 2½ mm. longus a basi sursum 5-lobatus, lobis superioribus fere totoconnatis. Petala 5 : vexillum obtriangu-

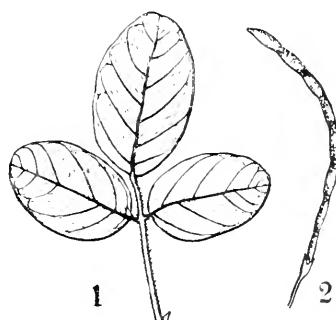


Fig. 14; *Desmodium akoense* HAYATA; 1, a leaf; 2, a pod.

lare 3 mm. longum  $3\frac{1}{2}$  mm. latum apice latissimum basi acutum; alæ late lineares  $3\frac{1}{2}$  mm. longæ 1 mm. latæ apice obtusissimæ basi breve unguiculatae, unguibus  $\frac{2}{3}$  mm. longis; carinæ longe unguiculatae, unguibus 2 mm. longis  $\frac{1}{4}$  mm. latis, laminis oblique obovatis  $2\frac{1}{2}$  mm. longis  $1\frac{1}{2}$  mm. latis. Stamina diadelpha, antheris rotundatis. Ovarium lineare  $3\frac{1}{2}$  mm. longum  $\frac{1}{3}$  mm. latum glabrum, stylo 1 mm. longo recurvo. Legumen lineare gracillimum ad nodos constrictum, internodiis articulatis linearibus 5 mm. longis 2 mm. latis breve strigoso-hirsutis scabris.

HAB. Akō, leg. Y. MATSUDA, No. 95, Aprili. 1915.

Near *D. laxiflorum*; but differs from it in the much smaller leaflets with the rounded or even emarginate tip.

**Desmodium Shimadai** HAYATA sp. nov. (Fig. 15). Suffrutex, ramis gracillimis teretibus tenuiter hirsutis erectis scandentibus. Folia simplicia lanceolata 10–14 cm. longa  $2\frac{1}{2}$ –3 cm. lata apice acuminata ad summum obtusa centro mucronata basi obtusissima truncata vel rotundata integra supra glabra subtus tomentella in exsiccato utraque pallidissima, supra venis venuisque tenuissime subtus prominente elevatis, petiolis 1– $1\frac{1}{2}$  cm. longis hirsutis, stipulis subulato-lanceolatis 4–5 mm. longis, stipulis oblique lineari-lanceolatis 6 mm. longis 1 mm. latis apice acuminatis glabris margine ciliolatis. Racemi terminales simplices rarius paniculati laxissime florati 15–20 cm. longi bracteati, pedicellis 5–10 mm. longis. Calyx late campanulatus 2–3 mm. longus 5–6 mm. latius extus hirsutus nitus glaber medio sursum 5-lobatus, lobis superioribus fere toto connatis, lobis lateralibus lineari-triangularibus  $2\frac{1}{2}$  mm. longis basi 1 mm. latis margine ciliatis acuminatis. Petala 5: vexillum obovatum 6–7 mm. longum 4 mm. latum apice obtusissimum basi cuneatum integrum; alæ obovato-lineares  $5\frac{1}{2}$  mm. longæ 2 mm. latæ apice obtusissimæ basi breve unguiculatae, ungue 1 mm. longo; carinæ 7 mm. longæ 2 mm. latæ obtusissimæ basi attenuatae subunguiculatae. Stamina diadelpha. Ovarium lineare 5 mm. longum  $\frac{1}{3}$  mm. latum breve hirsutum, stylo 1 mm. longo apice acuto. Legumen longe lineare gracillimum 8 cm. longum 2 mm. latum ad nodos constrictum valde complanatum hirsutum, internodiis  $1\frac{1}{2}$  em. longis.

HAB. Sankakuyū, leg. Y. SHIMADA.

Resembles *D. triquetrum* DC. in the leaves on one side, but on the

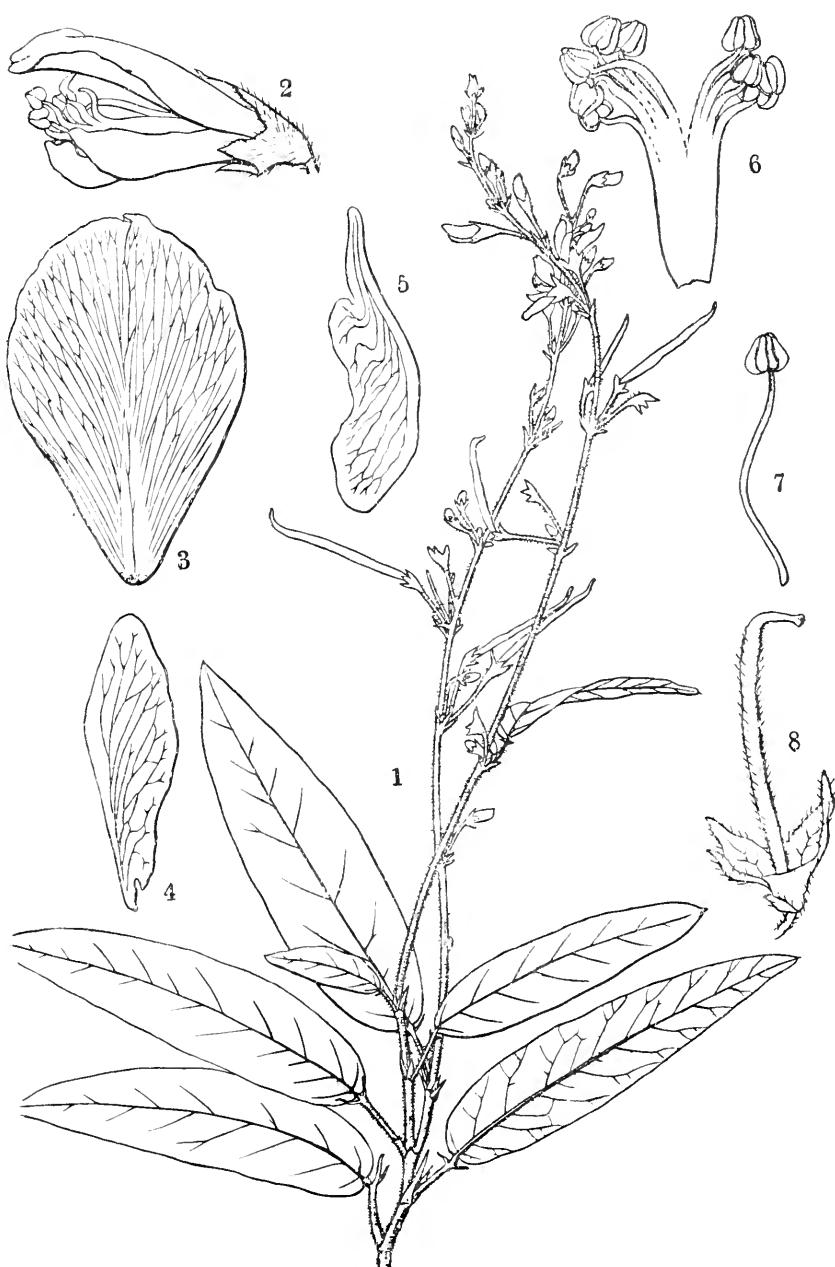


Fig. 15 ; *Desmodium Shimadai* HAYATA ; 1, a branch ; 2, a flower ; 3, a standard ; 4, a wing ; 5, a keel ; 6, 7, diadelphous stamens ; 8, an ovary with the calyx.

other, it is very near to *D. laxiflorum* in the inflorescence, flowers and fruits.

### *Uraria* DESV.

#### ***Uraria formosana*** HAYATA n. n.

*Desmodium formosanum* HAYATA Mater. Fl. Formos. p. 77; Gen. Ind. Fl. Formos. p. 19.

*Uraria latisepala* HAYATA Ic. Pl. Formos. III. p. 70; Gen. Ind. Fl. Formos. p. 22.

HAB. Jiechori, Raisha.

***Uraria yaeyamensis*** HAYATA sp. nov. Frutescens circ. 50 cm. alta. Caulis teres tenuiter pubescens. Folia alterna simplicia ovato-rotundata 3 cm.-6 cm. longa  $2\frac{1}{2}$ - $4\frac{1}{2}$  cm. lata apice perfecte rotundata ad centrum aristis minutis mucronata basi late truncato-cordata vel tenuiter cordata margine integra supra minus subtus plus pubescentia, costis venis subtus distincte elevatis, petiolis  $1\frac{1}{2}$ - $2\frac{1}{2}$  cm. longis tenuiter pubescentibus apice stipellis diabus subulato-linearibus 3-4 mm. longis instructis, stipulis cuspidato-triangularibus 7 mm. longis 3 mm. latis apice cuspidatis tenuiter pubescentibus. Spicae terminales cylindricæ 5-6 cm. longe  $1\frac{1}{2}$ -2 cm. late apice acutæ, densissime florifera, bracteis imbricatis ovato-rotundatis apice longe cuspidatis cum cuspidibus 9 mm. longis 6 mm. latis extus dense hirsutis intus glabris, pedicellis 3 mm. longis dense hirsutis. Calyx obconico-campanulatus usque ad medium 5-lobatus extus hirsutus, lobis superiorebus elongato-triangularibus  $1\frac{1}{2}$  mm. longis 1 mm. latis apice acuminatis margine ciliatis, lobis lateralibus longe setiformibus 5 mm. longis teretibus longe setuloso-hirsutis, lobo infimo lobis lateralibus conformi. Petala 5: vexillum ovato-rotundatum, ungue obtriangulari-cuneiformi  $1\frac{1}{2}$  mm. longo, lamina 3 mm. longa  $3\frac{1}{2}$  mm. lata late ovato-rotundata integra; alæ cultriformes, ungue linearis 1 mm. longo, laminis oblongo-cultriformibus  $3\frac{1}{2}$  mm. longis  $1\frac{1}{2}$  mm. latis apice late truncatis basi latere superiore truncatis latere inferiore acutis; carina spathulato-cultiformes 5 mm. longæ  $1\frac{1}{2}$  mm. late apice obtusissimæ basi longe attenuate. Stamina diadelpha, filamentis fere connatis, partibus liberis  $\frac{1}{2}$  mm. longis, antheris oblongis  $\frac{1}{2}$  mm. longis  $\frac{1}{4}$  mm. latis. Ovarium lineare  $1\frac{1}{2}$  mm. longum, stylo 4 mm. longo glabro filiformi sursum crassiusculo, stigmate terminali.

HAB. Yaeyama, leg. Kanashiro, Juli. 1912.

Perhaps identical with *U. lagopoides* DC.; but differs from it by the nearly equally elongated lower calyx lobes and in the leaves with nearly cordate base.

### *Glycine* LINN.

***Glycine pescadrensis*** HAYATA sp. nov. Humilis scandentissima. Caulis teres adpresso hirsutus, pilis reflexis. Folia 3-foliata, foliolo terminali oblongo vel lanceolato  $1\frac{1}{2}$ -2 cm. longo 6-8 mm. lato apice obtusissimo basi obtusissimo supra subglabro subtus adpresso hirsuto, foliolis lateralibus paullo minoribus, petiolulis 1 mm. longis, stipellis 1 mm. longis subulatis, petiolis communibus  $1\frac{1}{2}$ -2 cm. longis adpresso hirsutis, stipulis subulato-lanceolatis  $2\frac{1}{2}$  mm. longis. Racemi axillares simplices 6 cm. longi laxe florati, pedicellis 2 mm. longis

bracteis lanceolatis 2 mm. longis hirsutis, bracteolis duabus basi floris dispositis linearibus  $1\frac{1}{2}$  mm. longis. Calyx tubuloso-campanulatus 4 mm. longus 3 mm. latus medio sursum 5-lobatus, lobis superioribus fere toto connatis lateralibus et infimis lineari-triangularibus 2 mm. longis cuspidiformibus extus hirsutis intus glabris. Petala 5: vexillum (ungue excepto) late rotundatum 5 mm. longum 6 mm. latum apice emarginatum basi late rotundatum integrum, ungue 2 mm. longo  $\frac{2}{3}$  mm. lato; alæ (unguis exceptis) obovato-lineares  $4\frac{1}{2}$  mm. longæ  $2\frac{1}{2}$  mm. latæ apice rotundatae basi latere superiore appendiculatae, unguibus 3 mm. longis  $\frac{1}{2}$  mm. latis; carinae (unguis exceptis) obovatae 3 mm. longæ 2 mm. latæ basi 1-appendiculatae, unguibus linearibus  $3\frac{1}{2}$  mm. longis  $\frac{1}{2}$  mm. latis. Stamina monadelpha, antheris ellipticis  $\frac{1}{2}$  mm. longis. Ovarium basi breve stipitatum 4 mm. longum  $\frac{2}{3}$  mm. latum dense adpresso hirsutum, stylo  $1\frac{1}{2}$  mm. longo apice capitulato. Legumen lineare 2 cm. longum 4 mm. latum.

HAB. Bōkotō, leg. T. KAWAKAMI, Mai. 1909.

Near *G. clandestina* WENDL.; but differs from it in the very obtuse and mucronate leaflets.

**Glycine subonensis** HAYATA sp. nov. (Fig. 16). Scendentissima volubilis; caulis teres adpresso fulvo-hirsutus, pilis reflexis, remote foliatus. Folia chartacea 3-foliolata, foliolo terminali lineari-lanceolato  $4\frac{1}{2}$ -5 cm. longo  $1-1\frac{1}{3}$  cm. lato apice obtusissimo ad centrum mucronato basi late cuneato vel obtuso integro subtrinervio, nervis lateralibus gracillimus, nervis venulisque supra et subtus tenuissime elevatis, pagine supra tenuissime adpresso subitus densissime adpresso subtiliter hirsuta, foliolis lateralibus paullo minoribus basi latioribus obliquis obtusissimis vel subrotundatis, petiolulis 2 mm. longis dense villosis, stipellis subulatis 1 mm. longis, petiolis communibus  $2-2\frac{1}{2}$  cm. longis reflexopilosus, stipulis lanceolato-subulatis hirsutis  $2\frac{1}{2}$  mm. longis. Racemi 8-10 cm. longi axillares simplices, floribus ad nodos simplicibus vel fasciculatis, bracteis ovato-lanceolatis extus hirsutis intus glabris, pedicellis 1 mm. longis hirsutis. Calyx basi bracteolis duabus ovato-lanceolatis  $1\frac{1}{2}$  mm. longis instructus; calyx campanulatus 3 mm. longus  $2\frac{1}{2}$  mm. latus extus hirsutus a medio 5-lobatus, lobis oblongo-triangularibus  $1\frac{1}{2}$  mm. longis 1 mm. latis acuminatis, superioribus longioribus plus minus connatis, extus hirsutis intus glabris. Petala 5:



Fig. 16; *Glycine subonensis* HAYATA; 1, the plant; 2, a flower; 3, a standard; 4, a wing; 5, a keel; 6, monadelphous stamens; 7, ovary; 8, a seed.

vexillum obovato-oblongum 4 mm. longum 3 mm. latum apice emarginatum basi unguiculatum, ungue 1 mm. longo  $\frac{2}{3}$  mm. lato; alae cultriformes 4 mm. longae 1 mm. latæ apice obtusæ basi unguiculatae, unguibus  $1\frac{1}{2}$  mm. longis  $\frac{1}{4}$  mm. latis margine lateribus superioribus hirsutæ; carinæ obovato-spathulatae  $3\frac{1}{2}$  mm. latæ apice obtusæ valde concavæ basi unguiculatae, unguibus  $1\frac{1}{2}$  mm. longis  $\frac{1}{2}$  mm. latis. Stamina monadelpha, antheris ovato-cordatis  $\frac{1}{3}$  mm. longis apice acutis basi cordatis. Ovarium lineare 2 mm. longum glabrum sursum prope apicem dense hirsutum  $\frac{1}{2}$  mm. latum, stylo brevissimo  $\frac{1}{4}$  mm. longo glabro, stigmate capitato 2-lobato. Legumen lineare 5 mm. longum 3-4 mm. latum adpresso hirsutum plus minus falcatim recurvum valde complanatum apice subito recurvum. Semina oblonga  $3\frac{1}{2}$  mm. longa 2 mm. lata glabra.

HAB. Subonsha, leg. Y. MATSUDA.

**Glycine tabacina** BENTH.; FORBES et HEMSL. Ind. Fl. Sin. I. p. 189; HAYATA Gen. Ind. Fl. Formos. p. 20.

*Glycine tomentosa* HAYATA in Gen. Ind. Fl. Formos. p. 20. (non BENTH.)

HAB. Byōritsu, Pinan, Shintiku.

**Glycine tomentella** HAYATA sp. nov. Scendentissima; caulis teres gracilis reflexo-fulvo-tomentosus remote foliatus. Folia 3-foliata, foliolo terminali majore elliptica 3- $3\frac{1}{2}$  cm. longo 15-18 mm. lato apice obtusissimo vel rotundato ad centrum mucronato basi obtusissimo integro, venis subtus elevatis, utraque page tenuiter tomentoso, foliolis lateralibus minoribus 2 cm. longis 13 mm. latis apice obtusissimis basi rotundatis subæqualibus, petiolulis 2 mm. longis tomentosis, stipellis subulatis 1 mm. longis, petiolis communibus 2- $2\frac{1}{2}$  cm. longis tomentosis, stipulis lanceolato-triangularibus  $2\frac{1}{2}$  mm. longis hirsutis. Racemi axillares gracillimi folia multo superantes 8-16 cm. longi, partibus floriferis 2-4 cm. longis, rhachibus gracilibus hirsutis, bracteis minutis lanceolatis hirsutis, pedicellis 1 mm. longis hirsutis solitariis. Calyx tubuloso-campanulatus basi bracteolis duabus minutis instructus  $3\frac{1}{2}$  mm. longus 2 mm. latus a medio 5-lobatus, lobis superioribus ad medium connatis, lobis lateralibus lanceolato-triangularibus 2 mm. longis  $\frac{2}{3}$  mm. latis apice acuminatis vel subulato-acuminatis intus glabris extus dense hirsutis. Petala 5: vexillum late rotundatum, lamina  $4\frac{1}{2}$  mm. longa 6 mm. lata apice emarginata, basi unguiculatum, ungue 2 mm. longo cuneiformi; alæ obovato-cultriformes cum ungu-

bus  $1\frac{1}{2}$  mm. longis linearibus 6 mm. longæ 2 mm. latae apice late truncatæ obtusissimæ basi latere superiore appendiculatæ; carinae obovato-cultriformes cum mungibus 2 mm. longis linearibus  $4\frac{1}{2}$  mm. longæ apice obtusissimæ basi latere superiore 1-appendiculatæ. Stamina monadelpha, antheris ovato-oblongis. Ovarium lineare 2-3 mm. longum  $\frac{1}{3}$  mm. latum subglabrum sursum dense longeque hirsutum, stylo 1 mm. longo apice capitato. Legumen rectum complanatum 2 cm. longum 4 mm. latum breve reflexo-hirsutum. Semina irregulariter subglobosa  $1\frac{3}{4}$  mm. longa glabra.

HAB. Tainan, Takao, Akao.

Near *G. tomentosa* BENTH., but differs from it in the smaller obovate leaves.

### *Galactia* P. Br.

**Galactia lanceolata** HAYATA sp. nov. (Fig. 17). Scendentissima vel volubilis; caulis teres gracillimus subglaber. Folia alterna 3-foliolata, foliolo terminali lanceolato apice obtusissimo basi obtusissimo vel rotundato-obtuso integro utroque latere tenuissime hirsuto subtus venulis minute reticulato chartaceo, foliolis lateralibus terminali conformibus pumilio minoribus, petiolulis

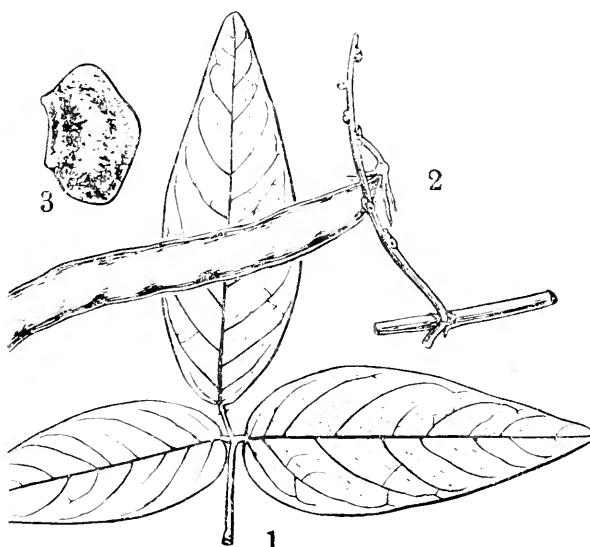


Fig. 17; *Galactia lanceolata* HAYATA; 1, a leaf; 2, a pod; 3, a seed.

2 mm. longis hirsutis, stipulis subulato-triangularibus 1 mm. longis, petiolis communibus  $1-1\frac{1}{2}$  cm. longis, stipulis lanceolato-subulatis  $2\frac{1}{2}$  mm. longis  $\frac{1}{2}$  mm. latis acuminatis extus hirsutis intus glabris. Flores ignoti. Legumen lineare 7 cm. longum 6-7 mm. latam valde complanatum subglabrum apice oblique acutum basi oblique obtusum, valvis cartagineis, 10-spermum. Se-

mina oblonga  $5\frac{1}{2}$  mm. longa 4 mm. lata plus minus complanata glabra.

HAB. Shubonsha, leg. Y. MATSUDA, Jan. 1916.

Near *G. formosana*; but differs from it in the lineolate leaflets.

### *Pueraria* DC.

**Pueraria phaseoloides** BENTH.; HAYATA Gen. Ind. Fl. Formos. p. 22.

HAB. Akō: Naiho, leg. Y. MATSUDA, No. 631.

### *Phaseolus* LINN.

**Phaseolus Mungo** LINN.; HAYATA Gen. Ind. p. 21. (Fig. 18). Scandentissima; caulis gracillimus reflexo-pilosus plus minus sulcatus remote foliatus. Folia alterna 3-foliolata, foliolo terminali ovato-rhomboideo 9 cm. longo  $5\frac{1}{2}$  em. lato apice acuto basi late cuneato margine integro vel plus minus sinuato membranaceo utraque pagine hirsuto vel glabro, foliolis lateralibus aequilongis valde obliquis basi late rotundatis 3-nerviis, petiolulis 3 mm. longis hirsutis, stipulis ovato-lanceolatis 5 mm. longis apice subulato-acuminatis glabris, petiolis communibus 6–10 cm. longis reflexo-hirsutis, stipulis oblongis 8 mm. longis 3 mm. lati integris apice acuminatis basi auriculatis peltatum affixis extus hirsutis intus glabris. Racemi 2–3-floriferi longe pedunculati, pedunculis 5–6 cm. longis reflexo-hirsutis, rachibus racemi 2–3 mm. longis, rachibus fasciculorum plus minus nodiformibus, pedicellis florum 2–3 mm. longis. Calyx obconico-campanulatus  $3\frac{1}{2}$  mm. longus 4–5 mm. latus glaber margine ciliolatus apice 5-lobatus, lobis superioribus fere toto connatis apice rotundatis, lobis cæteribus triangularibus 2 mm. longis totiusque lati apice obtusis margine ciliolatis intus hirsutis. Petala 5: vexillum latissime rotundatum 22 mm. latum 10 mm. longum apice emarginatum basi late breveque unguiculatum utroque latere unguis minute appendiculatum; alæ oblique obovatae valde concavæ 12–15 mm. longæ 10 mm. latae apice rotundatae basi recurvæ unguiculatae, ungaibus 2 mm. longis latere superiore 1-appendiculatae; carinæ circulari-falcato-

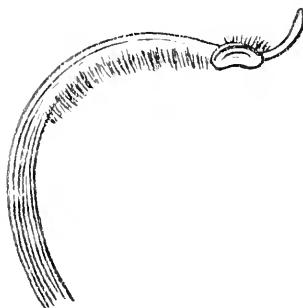


Fig. 18; a style of *Phaseolus Mungo* LINN.

lunulatæ 5 mm. latæ apice truncatae basi unguiculatae, unguibus 3 mm. longis 1 mm. latis. Stamina diadelpha, antheris ovatis  $\frac{1}{2}$  mm. longis. Ovarium lineare 6 mm. longum  $\frac{2}{3}$  mm. latum hirsutum complanatum, stylo  $1\frac{1}{2}$  cm. longo spiraliter recurvo sursum latere interiore hirsuto, stigmate laterali, partibus supra stigma 1–2 mm. longis subulatis. Legumen lineare 6–7 cm. longum 4 mm. latum minute hirsutum scaberrimum.

*Vigna reflexopilosa* HAYATA Gen. Ind. Fl. Formos. p. 22.

HAB. Kelung, Ako, Kwarenko, Suisha.

NOTE: Standard pale-yellow, more or less purple on the back.

**Phaseolus heterophyllus** HAYATA sp. nov. Scandentissima gracilis, caulis teres reflexo-pilosus. Folia alterna 3-foliolata, foliolo terminali ovato-rhomboideo usque ad lanceolato 2 cm. longo  $1\frac{1}{2}$  cm. lato apice triangulari-acuto basi late triangulari-acuto vel obtuso integro membranaceo 3-nervio utraque page tenuissime hirsuto, foliolis lateralibus obliquis terminali conformibus, petiolulis 1–2 mm. longis hirsutis, petiolis communibus  $2\frac{1}{2}$  cm. longis, stipellis lanceolatis  $2\frac{1}{2}$  mm. longis  $\frac{3}{2}$  mm. latis apice cuspidato-acuminatis, stipulis oblongis  $3\frac{1}{2}$  mm. longis  $1\frac{1}{4}$  mm. latis apice obtusis basi rotundatis supra medium peltatim affixis margine ciliatis. Racemi axillares solitarii longe pedunculati apice 2–3-floriferi, pedunculis 7–8 cm. longis reflexo-pilosis, pedicellis 1 mm. longis hirsutis apice bracteolis duabus instructis, bracteolis lanceolatis acuminatis hirsutis 4 mm. longis 1 mm. latis margine ciliolatis. Calyx obconico-campanulatus  $3\frac{1}{2}$  mm. longus 3 mm. latus glaber apice 5-lobatus, lobis superioribus toto connatis apice obtusissimis, lobis lateralibus late breveque triangularibus 1 mm. longis  $1\frac{1}{2}$  mm. latis, lobo infimo longe triangulari  $1\frac{1}{2}$  mm. longo 1 mm. lato, lobis totis margine ciliolatis. Petala 5: vexillum latè rotundatum 1 cm. longum  $1\frac{1}{2}$  cm. latum apice emarginatum basi leviter cordatum brevissime unguiculatum, nngue 1 mm. longo, utroque latere unguis appendiculatum; alæ obovatæ unguiculatum cum unguibus 9 mm. longæ 5–6 mm. latæ apice basi cuneatæ breve unguiculatae latere superiore appendiculatae; carinæ circulari-falcato-lunulatae 9 mm. longæ 3–4 mm. latæ apice truncatae intus sursum plus minus hirsutæ basi cuneato-unguiculatae, unguibus 2 mm. longis. Stamina diadelpha, tubo filamentorum rubro-striato, antheris oblongo-ovatis  $\frac{2}{3}$  mm. longis  $\frac{1}{2}$  mm. latis apice obtusis basi cordatis. Discus multilobatus, lobis digitiformibus. Ova-

rium lineare 5 mm. longum  $\frac{1}{2}$  mm. latum tenuiter hirsutum, stylo 2 cm. longo spiraliter recurvo sursum latere uno reflexo-hirsuto, stigmate latere apicis styli insito apice appendiculato, appendice subulato  $\frac{1}{2}$  mm. longo. Legumen lineare 4–5 cm. longum 2– $2\frac{1}{2}$  mm. latum plus minus complanatum scabriuscum; semina.....

*Phaseolus trilobus* HAYATA Gen. Ind. Fl. Formos. p. 21, (non AIT.)

HAB. Kelung, Töyen, Kwarenkō, Suō, Hikaku, Taitō. Shizangan, Tamsui.

Remarkable for its small and heteromorphous leaflets.

**Phaseolus rotundifolius** HAYATA sp. nov. Scendentissima humilis basi suffrutescens; caulis subrepens teres retrorsum hirsutus. Folia alterna 3-foliolata, foliolo terminali ovato-rotundato 13 mm. longo 11 mm. lato apice late truncato-rotundato basi late cuneato vel obtuso 3-nervio integro apice haud vel vix mucronato supra subtusque tenuissime hirsuto margine ciliolato, foliolis lateralibus terminali conformibus sed minoribus, petiolulis  $1\frac{1}{2}$  mm. longis hirsutis, stipellis oblongis apice longe cuspidatis 2 mm. longis  $\frac{2}{3}$  mm. latis, petiolis 2 cm. longis triquetris reflexo-hirsutis, stipulis ovato-oblongis 3 mm. longis  $1\frac{1}{2}$  mm. latis hirsutis ad medium affixis. Racemi apice 1–2-florati, pedunculis 4 cm. longis glabris, pedicellis hirsutis 1–2 mm. longis, bracteolis dubiis basi floris dispositis hirsutis. Calyx campanulatus 3 mm. longus 4 mm. latus glaber margine ciliolatus 5-lobatus, lobis superioribus fere connatis apice rotundato-obtusis, lobis lateralibus late triangularibus 1 mm. longis  $1\frac{1}{2}$  mm. latis obtusis margine ciliolatis. Petala 5: vexillum late rotundatum 1 em. latum 7 mm. longum apice emarginatum basi breve unguiculatum utroque appendiculatum margine integrum; alæ obovatae 7–8 mm. longæ 6 mm. latae apice rotundatae basi recurvæ cuneatae unguiculatae latere superiore appendiculatae, unguibus  $1\frac{1}{2}$  mm. longis; carinae falcato-lunulatae (ungue excepto) 9 mm. longæ 3 mm. latae apice truncatae, ungue linearis 2 mm. longo  $\frac{1}{2}$  mm. lato plus minus tortuoso. Stamina diadelpha, antheris oblongis  $\frac{1}{2}$  mm. longis  $\frac{1}{3}$  mm. latis. Ovarium lineare latere complanatum 5 mm. longum  $\frac{1}{2}$  mm. latum tenuiter hirsutum, stylo latere plus minus complanato linearis-filiformi apice subulato infra apicem a loco 1 mm. ab apice distanti usque ad locum 2–3 mm. longum barbato, cæterum glabro. Discus digitiformis. Legumen lineare subteres  $3\frac{1}{2}$  cm. longum 3–4 mm. latum apice acutum basi

obtusum subglabrum.

**Phaseolus trilobus** AIT.; BAKER in HOOK f. Fl. Brit. Ind. II. p. 201; WIGHT Ic. t. 94.

*Vigna stipulata* HAYATA Gen. Ind. Fl. Formos. p. 22.

HAB. Dakusui, Tainan.

***Vigna* SAV.**

***Vigna acuminata*** HAYATA sp. nov. Caulis scandentissimus volubilis teres pilosus, pilis retrorsis. Folia alterna 3-foliata, foliolis fere. conformibus, terminali lanceolato 6–7 cm. longo 1½ cm. lato apice acuminato ad summum breve aristato basi cuneato-aento margine integro supra minus subtus plus hirsuto, lateralibus basi plus minus obliquis, petiolulis 2 mm. longis hirsutis, stipellis oblongo-triangularibus 1–2 mm. longis hirsutis, petiolis 3–4 cm. longis reflexo hirsutis, stipulis oblongo-triangularibus 3 mm. longis hirsutis. Racemi axillares-longissime pedunculati, pedunculis 25 cm. longis glaberrimis erectis rectis vel recurvis ascendentibus, partibus floriferis 2–3 cm. longis, pedicellis 2 mm. longis hirsutis. Calyx late campanulatus 8 mm. latu 5 mm. longus 5-lolatus, lobis superioribus fere toto connatis obtusissimis, lobis lateralibus late triangularibus 2 mm. longis totiusque latis obtusis margine ciliolatis extus glabris intus pubescensibus, lobo infimo elongato-triangularibus 3 mm. longis acuminatis. Petala 5: vexillum late rotundatum 13 mm. longum 18 mm. latum apice emarginatum basi cordatum basi breve unguiculatum utroque latere basis breve appendiculatum extus glabrum intus basi minute hirsutum basi apice unguis transversum carinatum; alæ cuneato-obovatae 15 mm. longæ 6–7 mm. latæ apice rotundatae basi gradatim cuneatæ latere superiore prope basin 1-appendiculatae; carinae oblique semi-triangularis 13 mm. longæ 10 mm. latæ apice obtusæ basi breve unguiculatae, ungue 3 mm. longo. Stamina diadelpha, antheris ovato-oblongis. Ovarium lineare 10 mm. longum 1 mm. latum dense hirsutum latere complanatum, stylo 1½ cm. longo medio reflexo-tortuoso sursum latere uno hirsuto, stigmate laterali. Legumen lineare dense hirsutum.

HAB. Taihoku, Sōzan, Taitō.

Near *V. luteola*; but differs from it in the hirsute lanceolate leaflets.

*Dolichovigna* HAYATA n. g.

**Dolichovigna formosana** HAYATA sp. nov. (Pl. III.) scandentissima volubilis; caulis gracilis teres 1 mm. in sectione fulvo-villosus remote foliatus sursum versus apicem cirriformis. Folia alterna remote disposita trifoliata, foliolo terminali rhomboideo-ovato-oblongo 8 cm. longo 4 cm. lato apice attenuato obtuso basi rotundato margine subintegro utraque pagina tenuiter villosa, venis venulis subtus distincte elevatis, subtrinervio, foliolis lateralibus terminali conformibus oppositis basi valde obliquis, petiolulis 3 mm. longis stipellis minutis 1 mm. longis subulatis, petiolis communibus 3-4 cm. longis villosis, stipulis minutis elongato-triangularibus 2 mm. longis. Racemi axillares cum pedunculis 7-8 cm. longi, pedunculis 2 cm. longis, dense villosi, floribus geminatim fasciculatis approximativis dispositis, fasciculorum rhachi globosa 1½ mm. in diametro basi bracteis minutis triangularibus singulis hirsutis ½ mm. longis instructa, pedicellis ultinis 2½ mm. longis fulvo-tomentosis, bracteolis duabus utraque latere basis floris dispositis 1 mm. longis ovato-triangularibus hirsutis. Calyx campanulatus 6 mm. longus fulvo-hirsutus obliquus usque ad medium 5-lobatus, lobis elongato-triangularibus 4 mm. longis 3 mm. latis apice acuminatis intus breve villosis, lobis superioribus toto connatis. Petala 5: vexillum late ovato-rotundatum 12 mm. longum 15 mm. latum apice leviter emarginatum basi tenuiter cordatum breve unguiculatum; alæ quadrangulariformes 6-7 mm. longæ 3 mm. latæ basi longe unguiculatae, unguibus 3 mm. longis ½ mm. latis, utroque latere appendiculatae, appendiculis 1-1½ mm. longis interiore recurvis; carinae falcato-recurvæ basi longe unguiculatae, laevi 10 mm. longæ 5 mm. latæ apice attenuatae superiore recurva basi latere superiore plus minus late appendiculatae, unguibus linearibus 7 mm. longis ¾ mm. longis. Stamina 10 diadelphæ, filamentis connatis glabris, antheris ellipticis 1 mm. longis ½ mm. latis utroque emarginatis. Ovarium hirsutum 10 mm. longum 1 mm. latum latere complanatum apice gradatum attenuatum falcato-recurvum, stylo 7-8 mm. longo infra apicem loco ab apice 1 mm. distanti fasciculo pilorum instructo, stigmate truncato. Legumen lineare teres plus minus complanatum dense ferrugineo-vilosum 7-8 cm. longum 7 mm. latum apice aequum breve rostratum intus septatum. Semina

cylindrica 4-5 mm. longa 3 mm. lata utroque truncata nitida fuscopurpurascens.

HAB. Kiūkyokudō, leg. Y. MATSUDA; Takao; Tainan; Bantan, (Ako).

The present new genus is undoubtedly referable to the tribe *Phaseoleae*, as defined by BAKER, BENTHAM and HOOKER, and TAUBERT. As the style has a hair-tuft just below the stigma on the inner side, it should be assigned to the subtribe *Euphaseoleae*. It is near to *Dolichos* in the terminal stigma; but differs from it in having a hair-tuft just below the stigma on the inner side, in the tumid nodes of the racemes which are exactly like those of *Galactia* and *Pueraria*, and in having nearly terete pods with septas inside. It is comparable to some extents to *Phaseolus*, *Vigna*, *Pueraria*, *Canavalia* and *Galactia* in this point or that; from *Phaseolus*, it differs in the not spirally recurved keel, in the terminal stigma with hair-tuft on one side below it, and in the tumid nodes of the racemes; from *Vigna*, in the terminal stigma and in the tumid nodes of the racemes; from *Pueraria*, *Canavalia* and *Galactia*, in the hair-tuft below the stigma.

**Dolichovigna rhombifolia** HAYATA sp. nov. Scandentissima volubilis; caulis teres gracilis dense villosus remote foliatus versus apicem efoliatus cirriformis. Folia alterna 3-foliata, foliolo terminali rhomboideo-ovato-rotundato 3½ cm. longo 3 cm. lato apice triangulari-acuto ad summum aristato basi late truncato vel rotundato margine integro supra subtusque tenuiter pubescenti, venis venulis subtus distincte elevatis, foliolis lateralibus minoribus basi valde obliquis, petiolulis 2-3 mm. longis hirsutis, stipulis subulatis 1 mm. longis, petiolis communibus 2-3 cm. longis villosis, stipulis elongato-triangularibus 2 mm. longis hirsutis. Racemi breves 3-5 mm. longi pauciflorati, axillares, rhachi fasciculorum nodiformi, pedicellis 1-2 mm. longis hirsutis, bracteolis duabus basi floris dispositis triangularibus hirsutis 1 mm. longis. Calyx oblique campanulatus hirsutus 4 mm. longus totiusque latus 5-lobatus, lobis superioribus connatis obtusis, lateralibus late triangularibus 2 mm. longis 1½ mm. latis obtusis hirsutis; lobo infimo elongato-triangulari 3 mm. longo apice obtuso extus hirsuto intus villoso. Petala 5: vexillum late reniforme-cordatum 1 cm. longum 1½ cm. latum apice emarginatum basi cordatum, ungue 2 mm. longo; alae quadrangulariformes 6 mm. longe 3 mm. latae, ungu-

bus linearibus 3 mm. longis  $\frac{1}{2}$  mm. latis, laminæ basi utroque appendiculatae lineares; carinae falcato-lunulatae, laminæ 1 cm. longæ 4 mm. latæ apice obtusæ; unguibus 8 mm. longis  $\frac{1}{2}$  mm. latæ linearibus. Ovarium lineare 9 mm. longum  $1\frac{1}{2}$  mm. latum fulvo-hirsutum latere complanatum, stylo filiformi 10 mm. longo glabro, infera apicem loco 1 mm. ab apice distanti fasciculo pilorum instrueto, apice truncato stigmatoso.

HAB. Karapin, leg. S. SASAKI, Dec. 1911.

Near *Dolichovigna formosana* HAY.; but differs from it in the much smaller rhomboid leaflets.

### *Dolichos* LINN.

**Dolichos Lablab** LINN. var. **dolichocarpa** HAYATA n. v. Legumen lineari-cultriforme 7–9 cm. longum 12–15 mm. latum latere complanatum apice acuminatum, acumine rostrato, rostro deorsum recurvo.

HAB. Taihoku et Töyen, cult.; differs from the type by the much longer pods with recurved beaks.

### *Cæsalpinia* LINN.

**Cæsalpinia Sappan** LINN.; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 255; DUNN et TUTCHER Fl. Kwangt. and Hongk. p. 89.

HAB. Tökō, leg. T. SōMA, 1915.

**Cæsalpinia sepiaria** ROXB.; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 255; DUNN et TUTCHER Fl. Kwangt. and Hongk. p. 89.

HAB. Gaogan, leg. Y. SHIMADA, Juni. 1918.

### *Albizzia* DURAZZ.

**Albizzia longepedunculata** HAYATA sp. nov. Rami fuscentes leviter pubescentes verrucoso-lenticellati. Folia pubescentia bi-paripinnata in ambitu rotundata cum petiolis 15 cm. longa 4–6 juga, pinnis pinnatis superioribus longioribus oppositis in ambitu linearibus 10 cm. longis 3–4 cm. latis, pinnulis 6–9-jugis oppositis sessilibus superioribus majoribus oblongo-linearibus 27 mm. longis 8–9 mm. latis apice obtusissimis basi valde oblique truncatis integris utroque tenuissime hirsutis, petiolulis pinnarum 1 em. longis

basi incrassatis, petiolis communibus 4–5 cm. longis medio 1-glandulatis, glandulis oblongis adnatis. Flores capitulati, capitulis axillaribus simplicibus longe pedunculatis, pedunculis 4 cm. longis breve villosis, floribus breve pedicellatis, pedicellis 2–3 mm. longis hirsutis. Calyx tubuloso-campanulatus 2 mm. longus  $1\frac{1}{2}$  mm. latus tenuiter hirsutus intus glaber. Corolla elongato-tubuloso-campanulata 6–7 mm. longa 3 mm. lata extus hirsuta intus glabra supra medium sursum 5-lobata, lobis elongato-oblongis 3 mm. longis 1 mm. latis apice acutis vel obtusis. Stamina 80 basi monadelpha cum tubo filamentorum 3 cm. longa, antheris reniformibus  $\frac{1}{4}$  mm. longis  $\frac{2}{3}$  mm. latis. Ovarium fusiforme 3 mm. longum  $\frac{1}{2}$  mm. latum glabrum, style filiformi glabro. Legumen lineare 10 cm. longum 2 cm. latum apice obtusum basi ad stipitem 1 cm. longum attenuatum valde complanatum glabrum.

*Albizia Lebbek*, HAYATA Gen. Ind. p. 17, (non BENTH.).

HAB. Byōritsu: Taiko, leg. B. HAYATA et U. MORI, Juli. 1918.

Near *A. Lebbek* BENTH.; but differs from it by the axillary nearly solitary long-pedunculate heads with much smaller flowers.

## Rosaceæ.

### *Spiraea* LINN.

***Spiraea tarokoensis*** HAYATA sp. nov. Frutex; rami et ramuli graciles glabri fusco-purpurascentes. Folia alterna chartacea ea ramuli annotini majora rhomboideo-ovata  $2\frac{1}{2}$  cm. longa 2 cm. lata apice obtusissima basi late cuneata vel obtusa margine grosse cuneata ad apicem crenarum apiculata vel paucе serrata supra glabra subtus pallidissima ad venas venulasque tenuiter hirsuta, ea ramulorum hornotinorum minora  $1\frac{1}{2}$  cm. longa 8 mm. lata, petiolis 3–5 mm. longis hirsutis. Flores quasi-umbellati, umbellis ad apicem ramulorum hornotinorum hirsutis terminaliter sitis 15–20-floratis, pedicellis 1 cm. longis gracillimis. Calyx glaber rotato-obconicus, cupula  $1\frac{1}{2}$  mm. in diametro extus glabra intus hirsuta, lobis 5 triangularibus 1 mm. longis totiusque latis margine erosio apice acutis extus glabris intus hirsutis. Petala 5 late rotundata 2 mm. longa 3 mm. lata apice emarginata basi rotundata subito contracta utraque glabra. Stamina circ. 20, ad marginem cupulae 1-seriatim disposita, filamentis glabris

2 mm. longis, antheris reniformibus  $\frac{1}{4}$  mm. longis glabris; staminodia (vel glandulae) circ. 10, antheriformibus sessilibus oblongis  $\frac{1}{4}$  mm. longis. Carpella 5 ad centrum empulæ calycis disposita; ovariis semi-ovatis hirsutis, stylis glabris 1- $1\frac{1}{2}$  mm. longis.

HAB. Taroko, leg. B. HAYATA et S. SASAKI, Aprili. 1917.

Near *Spiraea nipponica* MAXIM.; but differs from it in the much shorter racemes nearly contracted to umbels, and in the leaves which are more or less serrate.

### ***Photinia*** LINDL.

***Photinia ardisiifolia*** HAYATA Gen. Ind. Fl. Formos. p. 23.

Closely resembles *Photinia prunifolia* LINDL., collected in Hongkong by myself; but distinguishable from it in the much longer leaves with no distinct reticulation of veinlets on the under side.

### ***Filipendula*** LINN.

***Filipendula kiraishiensis*** HAYATA sp. nov. (Fig. 19). Perennis; rhizoma repens lignosum. Caulis subtetragonus glaber purpureo-rubescens basi et secus longitudinem foliifer. Folia pinnata, basilaria in ambitu obovato-spathulata cum petiolis 10 cm. longa  $3\frac{1}{2}$  cm. lata basi attenuata imparipinnata, pinna terminali in ambitu pentagona 3 cm. longa  $3\frac{1}{2}$  cm. lata 5-loata, lobis basilaribus minoribus, lobo terminali majore, apice caudato-cuspidatis margine argute duplicato-serrulatis supra glabris subtus ad costas et venasque hirsutis, costis venisque supra impressis subtus elevatis, reticulis venularum utraque pagine impressis; pinnis lateralibus 3-4 jugis, superioribus majoribus  $1\frac{1}{2}$  em. longis, inferioribus minoribus, infimis ad auriculas minutis reductis, petiolis glabris  $2\frac{1}{2}$  em. longis basi utroque latere stipulis adnatis instructis, stipulis membranaceis 1 cm. longis acuminatis; foliis caulinis minoribus, superioribus sessilibus. Flores cymosi, cymis terminalibus, ramiculis divaricatis tenuiter hirsutis, pedicellis 5-10 mm. longis. Calyx glaber, cupula oboconico-plana glabra, lobis 5 trianguli-oblongis glabris 1 mm. latis  $1\frac{1}{2}$  mm. longis apice obtusis. Petala oblongo-rotundata  $3\frac{1}{2}$  mm. longa  $2\frac{1}{2}$  mm. lata apice rotundata basi valde contracta breve unguiculata, unguibus  $\frac{1}{4}$  mm. longis totiusque latis



Fig. 19; *Filipendula kiraishiensis* HAYATA; 1, the plant; 2, a flower; 3, a petal; 4, a stamen; 5, calyx with carpels; 6, a carpel.

glabris. Stamina circ. 10 ad marginem calycis cupulæ inserta, filamentis filiformibus 3 mm. longis glabris, antheris reniformibus  $\frac{1}{2}$  mm. longis utrinque emarginatis. Carpella circ. 10 semioblonga 1 mm. longa glabra latere valde complanata, stylo ab apice ovarii oriundo 1 mm. longo glabro, stigmate terminali.

HAB. Kiraishi, ad 10,000 ped. alt., leg. S. ŌHASHI, Aug. 1918.

Near *F. multijuga* MAX.; but differs from it in the much smaller leaves.

### Cucurbitaceæ.

#### *Thladiantha* BUNGE.

**Thladiantha formosana** HAYATA Fl. Mont. Formos. p. 100; Gen. Ind. Fl. Formos. p. 31. Descriptio ancta: Fructus baccatus globosus  $3\frac{1}{2}$  mm. longus totiusque latus setulosohirsutus  $\infty$ -spermus. Semina ovata 5 mm. longa  $3\frac{1}{2}$  mm. lata apice obtusa basi rotundata dorso complanata; testa crustacea.

HAB. Holisha, leg. T. KAWAKAMI, Dec. 1913.

### Caprifoliaceæ.

#### *Sambucus* TOURN.

**Sambucus formosana** NAKAI in Bot. Mag. (Tōkyō) XXXI. p. 211

*Sambucus javanica* HAYATA Gen. Ind. p. 34, (non BLUME).

#### *Viburnum* LINN.

**Viburnum Matsudai** HAYATA sp. nov. (Fig. 20). Frutex, ramuli validiuseuli rugosissimi deorsum glabri sursum dense villosi. Folia ad apicem ramulorum hornotinorum duæ oppositim disposita chartacea ovato-oblonga 4–5 cm. longa 15–22 mm. lata apice caudato-acuminata basi obtusissima vel rotundata margine argute serrata, serris triangularibus rectis ascendentibus acutis, supra minus subtus plus dense villosa, costis et venis supra impressis subtus elevatis, venis lateralibus rectis haud vel rarius furcatis ad apicem serrarum attingentibus, petiolis villosis brevissimis 2–3 mm. longis, stipulis minutis hirsutis subulatis ad basin petiolorum adnatis, glandulis singulis utroque latere basis foliorum subtus dispositis punctiformibus. Fructus cymosi, cymis

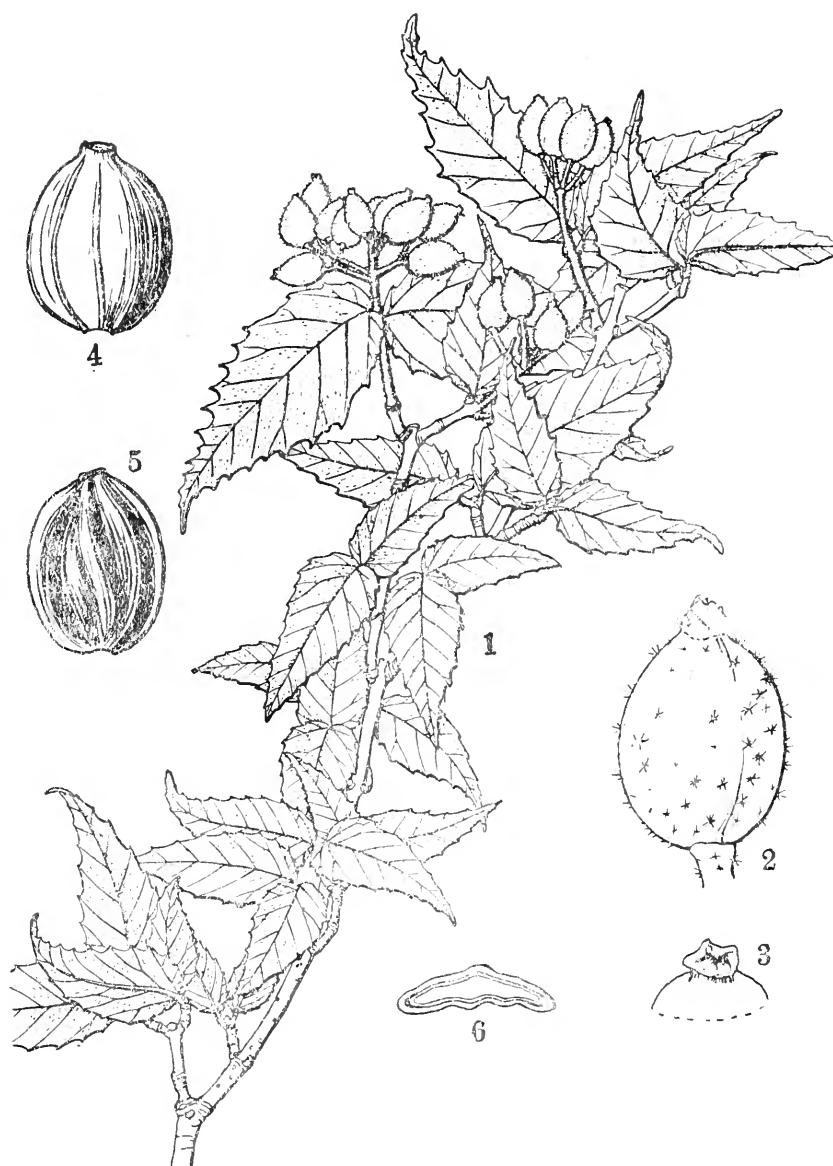


Fig. 20; *Viburnum Matsubai* HAYATA; 1, a branch; 2, a drupe; 3, apical portion of the same; 4, 5, a pyrene, seen from different sides; 6, cross section of the same.

ad apicem ramulorum propriorum terminalibus; drupe oblongæ 6 mm. longæ 4 mm. late stellato-hirsutæ; pyrenis oblongis dorso complanatis facie concavis vel planis dorso convexis.

HAB. Rarasan, leg. Y. MATSUDA, Juli. 1918.

Near *Viburnum erosum* THUNB.; but differs from it in the villose leaves with a long tail at the apex.

**Viburnum melanophyllum** HAYATA Ic. Pl. Formos. IV. p. 13, t. II.  
Descriptio aucta:—Frutex, ramis valde divaricatis. Folia adulta opposita chartacea ovato-cordata 8 cm. longa 6 cm. lata apice acuta vel breve cuspidato-acuta basi leviter cordata margine serrulata supra in exsiccato fusco-fulvescentia subitus pallidissima utraque pagine subglabra ad nervos venasque pubescentia. Flores fere albi sed dorso plus minus rubescentes. Cymæ fructiferæ ad apicem ramulorum terminales umbellatim dispositæ. Drupa ellipsoidea in exsiccato sieca 6 mm. longa 4½ mm. lata plus minus complanata apice stylo conico et calycis lobis coronata glabra nigricans 1-locularis, endocarpio cartilagineo, 1-sperma; semina elliptica 6 mm. longa 3½ mm. lata apice apiculata basi obtusa facie profunde sulcata, testa membranacea rubescenti, albumine carnosæ ruminanti.

HAB. Taiheizan, leg. B. HAYATA et S. SASAKI, Mai. 1917; Rarasan, leg. Y. MATSUDA, 1918.

**Viburnum morrisonense** HAYATA (Fig. 21) Mater. Fl. Formos. p. 133.  
Descriptio aucta:—Frutex. Cymæ ad apicem ramulorum lateralium terminales 3-4-aggregatae 3-4 cm. longæ 5 cm. late umbelliformes, pedicellis ultimis 3-5 mm. longis stellato-hirsutis. Calyx stellato-hirtellus, tubo (cum ovario) 1 mm. longo ¾ mm. lato, lobis 5 ovato-rotundatis triangularibus ½ mm. longis apice acutis vel rotundatis plus minus ciliolatis. Corolla rotata alba glabra 5 mm. in diametro 5-lobata, lobis rotundatis 2 mm. longis totiusque lati apice rotundatis basi contractis margine minute erosis glabris. Stamina 5, tubo corollæ affixa, filamentis liberis 2-3 mm. longis glabris, antheris oblongo-rotundatis ¾ mm. longis apice emarginatis basi tenuiter lobatis. Stylus conicus cum stigmate 1 mm. longus, stigmate 2-3-sulcato.

HAB. Taiheizan, leg. B. HAYATA et S. SASAKI, Mai. 1917.



Fig. 21; *Viburnum morri onense* HAYATA; 1, a branch; 2, a flower; 3, corolla, expanded; 4, a portion of the margin of the same corolla; 5, 6, a stamen, seen from different sides; 7, ovary; 8, a hair of the ovary; 9, a pyrene; 10, cross section of the same.

**Viburnum taihasense** HAYATA sp. nov. (Fig. 22). Frutex; rami et rami glabri subrecti fusco-purpurascens. Folia ad apicem ramulorum hornotinorum oppositum duo disposita membranacea vel tenuiter chartacea oblongo-ovata 6 em. longa 3½ em. lata apice subito cuspidato-acuminata basi rotundata obtusa vel tenuiter cordata margine argute serrata supra subglabra subtus pallida ad venas venulasque tenuiter hirsuta, venis venulisque supra impressis subtus elevatis, petiolis 1½ em. longis hirsutis, stipulis subnudis. Cymæ terminales 2–3 cm. longæ totiusque latae subglabrae vel tenuiter hirsutæ ternatim ramosæ, bracteolis linearibus 2 mm. longis ½ mm. latis hirsutis, pedicellis ultimis 1–2 mm. longis cum ovario articulatis. Calyx-tubus (cum ovario) oboconico-cylindricus 1½ mm. longus, lobis 5 oblongis subglabris ⅓ mm. longis ½ mm. latis margine ciliolatis. Corolla subrotata 4–5 mm. in diametro, tubo 1 mm. longa 2 mm. lato extus plus minus hirsuto intus glabro, lobis 5 late rotundatis 1 mm. longis 1½ mm. latis. Stamina 5 basi corollæ affixa, filamentis 2 mm. longis glabris, antheris oblongo-rotundatis ⅓ mm. longis glabris. Stylus conicus glaber 1 mm. longus apice 2–3-lobulatus.

HAB. Taihasenzan, ad 10,000 ped. alt., leg. T. ITŌ, Jun. 1915.

Near *Viburnum Wrightii* Miq., but differs from it in the much more hirsute calyx-tube.

**Viburnum villosifolium** HAYATA sp. nov. Frutex, rami et rami rectis fusco-purpurascens versus apicem tenuiter villosi. Folia opposita lanceolata 2½–3 cm. longa 12–15 mm. lata apice gradatim acuminata basi obtusa margine argute serrulata utraque pagina dense stellato-villosa pinnivena, petiolis 1–2 mm. longis, stipulis caducissimis linearibus 1–2 mm. longis castaneis pubescentibus. Cymæ terminales 2 cm. longæ totiusque latae dense villosæ, bracteis linearibus pilosis 3–5 mm. longis ⅔ mm. latis apice obtusis, pedicellis 1–1½ mm. longis dense stellato-villosis. Calyx-tubus obovoides plus minus complanatus 1½ mm. longus dense villosus, limbo alte 5-lobato, lobis oblongo-linearibus 1½ mm. longis ⅔ mm. latis apice obtusissimis vel truncatis extus sparse hirsutis intus glabris margine ciliolatis. Corolla rotata, tubo ½ mm. longo, extus sparse hirsuta vel glabra, limbo 5-lobato, lobis rotundatis 1½ mm. longis totiusque latis apice rotundatis basi plus minus contractis margine erosis subintegris. Stamina 5 e basi corollæ oriunda, filamentis 1 mm.

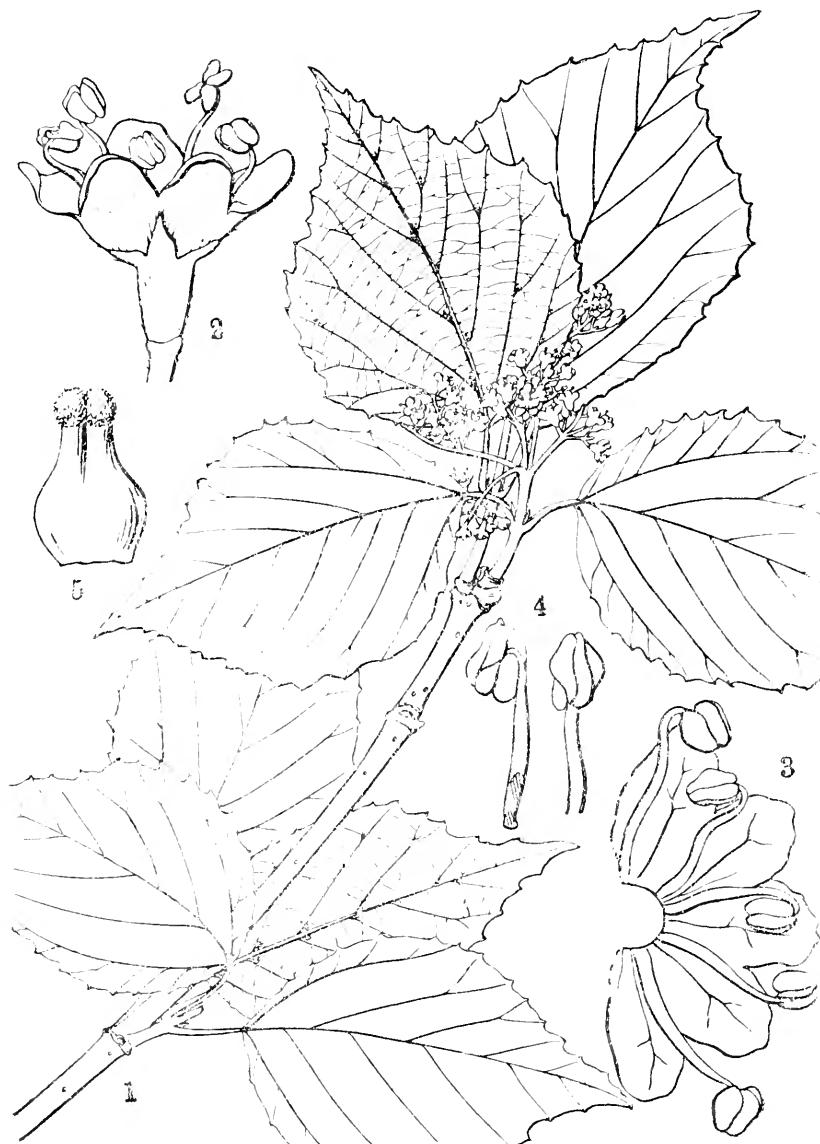


Fig. 22; *Viburnum taitogense* HAYATA; 1, a branch; 2, a flower; 3, corolla, expanded; 4, a stamen, seen from different sides; 5, a style.

longis, antheris reniformibus  $\frac{1}{2}$  mm. latis. Stylus basi conicus apice columnaris  $\frac{1}{2}$  mm. longus apice truncatus.

HAB. Rontabunzan, leg. U. MORI, Aprili. 1910.

Near *Viburnum luzonicum* ROLFE; but differs from it in the much longer linear bracts.

*Lonicera* LINN.

**Lonicera japonica** THUNB. var. **semperfervillosa** HAYATA n. v. Frutex scandentissimus, ramis ramiculis teretibus molle villosus. Folia opposita tenuiter chartacea ovato-oblonga  $4\frac{1}{2}$ -6 mm. longa  $2\frac{1}{2}$ - $3\frac{1}{2}$  cm. lata apice obtusissima ad summum breve apiculato-acuta basi truncato-rotundata vel tenuiter cordata margine integra supra tenuiter hirsuta subtus dense villoso-velutinosa margine ciliolata, petiolis 8 mm.-10 mm. longis villosis. Flores versus apicem ramulorum axillares solitarii vel geminati, pedicellis 3-5 mm. longis villosis apice flores geminatim gerentibus, floribus sessilibus basi bractea singula bracteolis duabus instructis, bracteis foliis conformibus minoribus, bracteolis oblongis 2 mm. longis apice obtusissimis dense villosis. Calyx tubus (cum ovario) oboconico-ellipticus 2 mm. longus totiusque latius basi sparse hirsutus fere glaber, limbo alte 5-lobato, lobis elongato-triangularibus  $1\frac{1}{2}$  mm. longis longe hirsutis. Corolla tubuloso-campanulata extus hirsuta 4-5 cm. longa, tubo 2 mm. lato, limbo 2-labiato, labio superiore late cuneiformi 3 cm. longo  $1\frac{1}{2}$  cm. lato apice truncato lasi angustato apice ad medium 4-lobato, lobis spatulato-linearibus 18 mm. longis 4 mm. latis apice obtusissimis, intus (supra) sparse hirsuto extus (infra) dense hirsuto, labio inferiore linearis  $2\frac{2}{3}$  cm. longo 3-4 mm. lato apice obtusissimo extus dense hirsuto intus sparse hirsuto; corollæ tubus intus dense hirsutus. Stamina 5 fauce corollæ affixa, filamentis filiformibus  $2\frac{1}{2}$  cm. longis glabris, antheris linearibus  $2\frac{1}{2}$  mm. longis. Stylus filiformis glaber exsertus  $4\frac{1}{2}$  cm. longus, stigmate pulviniformi 2-lobato.

*Lonicera japonica* HAYATA Gen. Ind. p. 34, (non THUNB.).

HAB. Shintiku, Taihoku, Kelung.

Near *Lonicera japonica* THUNB.; but differs from it in the leaves which are always thinly hairy above, but densely villose beneath. *L. japonica* has nearly glabrous leaves.

**Lonicera oiwakensis** HAYATA Ic. Pl. Formos. VI. p. 24.

NOTE: Flowers always in pair; calyx green; corolla white, but slightly pink towards the apex; anthers white; styles white, stigma green.

**Lonicera rubropunctata** HAYATA sp. nov. Frutex scandentissimus, ramis teretibus pilosis, pilis patentissimis, vel villosis. Folia opposita ovato-oblonga 7 cm. longa  $3\frac{1}{2}$  cm. lata apice acuminata ad summum breve aristata basi rotundata vel truncata margine integra supra glabra subtus villosa et rubropunctata tenuiter chartacea, petiolis 5–10 mm. longis villosis. Cymæ axillares vel ad apicem ramulorum terminales, pedicellis 5 mm. longis hirsutis apice flores geminatim gerentibus, bracteis sub flore sessili singulis subulato-lanceolatis 4 mm. longis longe hirsutis intus glabris, bracteolis duabus utroque latere floris dispositis rotundatis utraque pagine glabris margine longe ciliatis  $1\frac{1}{3}$  mm. in diametro. Calycis tubus (cum ovario) oblongus 2 mm. longus  $1\frac{1}{2}$  mm. latus glaber, limbo 1 mm. longo 6-partito, partibus cuspidato-triangularibus margine longe setuloso-ciliatis. Corolla extus tenuiter hirsuta tubulosocampanulata, tubo 2 cm. longo 2 mm. lato limbo 2-labiata, labio superiore cuneiformi 18 mm. longo 7 mm. lato apice truncato basi attenuato extus sparse hirsuto intus deorsum hirsuto sursum glabro, labio inferiore linearis 18 mm. longo  $1\frac{1}{2}$  mm. lato apice obtusissimo extus sparse hirsuto intus deorsum hirsuto; corollæ tubus intus dense hirsutus. Stamina 5 fave corollæ affixa, filamentis 2 cm. longis filiformibus glabris, antheris linearibus 4 mm. longis  $\frac{1}{2}$  mm. latis. Stylus filiformis 5 cm. longus glaber apice plus minus dilatatus stigmata peltato.

HAB. Heirinbi, Giochi, Suisha, leg. B. HAYATA, April. 1916.

Near *L. macrantha* DC., but differs from it in the leaves which are minutely glandular-dotted beneath.

**Lonicera shintenensis** HAYATA sp. nov. Scandentissima, ramis teretibus tenuiter villosis. Folia opposita ovato-oblonga tenuiter chartacea 6 cm. longa 3 cm. lata apice acuta vel aristato-acuta basi rotundata margine integra supra glabra subtus dense breveque villosa, petiolis dense villosis, stipulis nullis. Cymæ axillares cum pedunculis 2 cm. longis 3 cm. longæ 2 cm. latae breveque villosæ, bracteis (basi pedicelli) subulato-linearibus dense hirsutis 5 mm. longis basi plus minus dilatatis. Flores ad apicem pedicellarum geminatim dispositi sessiles basi bracteis cuspidato-triangularibus  $1\frac{1}{2}$  mm. longis extus hirsutis intus glabris singulis instructi, bracteolis duabus utroque latere floris dispositis rotundatis  $\frac{2}{3}$  mm. in diametro utraque pagine glabris margine ciliolatis. Calyx-

**tubus** (cum ovario) oboconico-globosus 1 mm. longus glaber, limbo 1 mm. longo usque ad medium 5-lobato, lobis cuspidato-triangularibus circ. 1 mm. longis extus sparse hirsutis intus glabris margine ciliatis. Corolla 12 mm. longa tubuloso-campanulata extus retrorse vel patente hirsuta, tubo circ. 1 mm. lato, limbo 2-labiato, labio inferiore linearis 5 mm. longo 1 mm. lato apice obtusissimo extus hirsuto intus secus medium hirsuto, labio superiore elongato-obtriangulari 7 mm. longo 4 mm. lato extus hirsuto intus deorsum hirsuto sursum glabro 4-lobato, lobis oblongis 2 mm. longis obtusis, tubo corollæ intus dense hirsuto. Stamina 5, fance tubi corollæ affixa, filamentis incrassatis 2-4 mm. longis glabris, antheris versatilibus dorso medio affixis linearibus  $3\frac{1}{2}$  mm. longis 1 mm. latis utraque extremitate obtusis vel emarginatis. Stylus glaber 12 mm. longus apice plus minus dilatatus truncatus.

HAB. Shinten, leg. B. HAYATA, Mai. 1916.

Near *L. japonica* and *L. affinis*; but readily distinguishable from it in having much smaller flowers.

## Rubiaceæ.

### *Uncaria* SCHREB.

#### **Uncaria formosana** HAYATA n. n.

*Orouparia formosana* HAYATA in MATSUM. et HAYATA Enum. Pl. Formos. p. 183, t. XIV.-B.

*Nauclea formosana* MATSUM. in Tokyo Bot. Mag. XIV. p. 127.

**Uncaria Kawakamii** HAYATA Mater. Fl. Formos. p. 140. Descriptio aucta:—Fruetus ad apicem pedunculi capitatum aggregati clavato-fusiformes  $1\frac{1}{2}$  cm. longi 2 mm. lati hirsuti circ. 10-striati 2-loculares  $\infty$ -spermi stipitati, stipitibus 7 mm. longis hirsutis; semina minuta globosa  $\frac{1}{4}$  mm. in diametro minute reticulata ad utramque extreminatem arillis linearibus alaeformibus 1 mm. longis instrueta.

HAB. Kōtōshō, leg. T. KAWAKAMI et SASAKI, Juli. 1912.

**Uncaria uraiensis** HAYATA sp. nov. Frutex scandens, rami et ramuli subtetragoni facie late sulcati minute lenticellati plus minus hirsuti. Folia opposita chartacea vel tenuiter coriacea elliptica 12 cm. longa  $6\frac{1}{2}$  cm. lata

apice subito acuminata basi rotundata supra glabra subtus tenuiter hirsuta margine integra, venis supra impressis subtus elevatis, petiolis 8–10 mm. longis. Capitulum florum axillare solitarium pedunculatum, pedunculo 4–5 cm. longo hirsuto medio bracteis duabus oppositis instructo, capitulis globosis 5 cm. in diametro, receptaculo paleaceo dense hirsuto, paleis linearibus. Flores sessiles. Calyx obconico-cylindricus dense villoso-hirsutus 9 mm. longus 3 mm. latus apice 5-lobatus, lobis dense hirsutis elongato-triangularibus 2 mm. longis  $1\frac{1}{2}$  mm. latis. Corolla hypocrateriformis, tubo tubuliformi circ. 1 cm. longo tenuiter hirsuto, limbo patenti 6–7 mm. in diametro 5-lobato, lobis obovato-oblongis 3 mm. longis  $1\frac{1}{4}$  mm. latis apice obtusis intus glabris extus hirsutis. Stamina 5, antheris sessilibus 2 mm. longis apice obtusis basi 2-lobatis, vel stipitibus brevissimis instructis. Stylus longe exsertus 2 cm. longus glaber. erectus rectus apice stigmate claviformi  $3\frac{1}{2}$  mm. longo 1 mm. lato instructus Ovarium cylindricum 3 mm. longum cum tubo calycis connatum. Fructus capitatim fasciculati, capitulis  $4\frac{1}{2}$  cm. in diametro; capsula sessilis obovoidea 1 cm. longa 5 mm. lata apice obtusissima basi attenuata septicidalis 2-cocca  $\infty$ -sperma; seminibus oblongis  $\frac{1}{2}$  mm. longis muricatis ad utramque extremitatem arillus alaeformibus linearibus  $1\frac{1}{2}$  mm. longis instructis, arilla altra 2-fida, altra haud fida.

HAB. Uraisha, leg. T. SōMA et Y. SHIMADA, Aprili. 1915.

*Orouparia uraiensis* HAYATA in Herb. Taihoku.

HAB. Urai, Remogan.

Near *Uncaria Kawakamii* HAY.; but quite different from it in having much shorter ovoid capsules.

### *Nauclea* LINN.

***Nauclea truncata* HAYATA** Materials for a Flora of Formosa p. 139. Descriptio aucta:—Frutex; folia obovata 20–40 cm. longa 15–20 cm. lata apice rotundata breve cuspidato-acuta ad summum obtusa basi late cuneata ad extremitatem obtusissima subsessilia. Capitulum fructus globosum 3– $3\frac{1}{2}$  cm. in diametro; capsula obconico-cylindrica 1 cm. longa apice 3 mm. lata 2-valvatim loculicidalis; seminibus  $\infty$ , cum alis linearibus 3 mm. longis  $\frac{1}{4}$  mm. latis.

HAB. Inter Busegan et Seisui, leg. B. HAYATA et S. SASAKI, Mai. 1917.

***Nauclea taiwaniana* HAYATA** Materials for a Flora of Formosa p. 140.

Descriptio aucta :—Capitulum floris globosum 2 cm. in diametro axillare vel breve recemosum, racemis terminalibus. Receptaculum globosum dense hirsutum bracteolis vel paleis minutis trabeculiformibus apice clavatis hirsutis 1 mm. longis instructum. Calyx sessilis obconico-cylindricus 2 mm. longus apice 1 mm. latus dense hirsutus, limbo 5-partito, partibus obovatis  $\frac{2}{3}$  mm. longis  $\frac{1}{4}$  mm. latis apice obtusis dense hirsuto-tomentosis. Corolla longe tubulosa 6 mm. longa sursum latior apice 2 mm. lata extus brevissime hirsuta apice 5-lobata, lobis triangularibus obtusis 1 mm. longis vel latis, tubo intus glabro. Stamina 5, limbo corollæ affixa, antheris subsessilibus lanceolatis  $1\frac{1}{2}$  mm. longis  $\frac{1}{2}$  mm. latis apice acutis introrsis basi 2-lobatis. Stylus longe exsertus glaber medio incrassatus apice clavatus. Ovarium inferum.

HAB. Kōshūn : Kankao.

***Cephalanthus* LINN.**

***Cephalanthus glabrifolius* HAYATA** sp. nov. Frutex? ramuli glabri rubescentes. Folia opposita chartacea oblonga 13 cm. longa 6 cm. lata apice cuspidato-acuta basi rotundata margine subintegra utraque pagina glabra, petiolis  $1\frac{1}{2}$ –2 cm. longis, stipulis interpetiolaribus late triangularibus. Capitulum florium globosum 4–5 cm. in diametro axillare vel terminale solitarium longe pedunculatum, pedunculis 6–7 cm. longis glabris patentibus. Receptaculum capituli florium globosum dense hirsutum paleaceum, paleis (bracteolis) lineari-clavatis 3 mm. longis apice incrassatis hirsutis. Calyx sessilis obconico-tubulosus 3 mm. longus  $1\frac{1}{2}$  mm. latus sursum dense villosus apice 4-dentatus, dentibus brevissimis obtusissimis villosis. Corolla elongato-tubulosa 8 mm. longa glabra basi angustissima sursum latior apice 4-lobata, lobis obovato-rotundatis  $1\frac{1}{2}$  mm. longis  $1\frac{1}{4}$  mm. latis apice obtusissimis basi plus minus contractis extus glabris intus tenuiter hirsutis, glandulis nigris minutis singulis inter lobos dispositis; tubo corollæ extus glabro intus hirsuto. Stamina 4 ad fæcsem corollæ affixa sessilia, antheris lineari-sagittatis  $1\frac{1}{2}$  mm. longis  $\frac{1}{2}$  mm. latis apice acuto-obtusis basi sagittatis. Stylus longe filiformis glaber apice clavato-globoso-dilatatus.

***Cephalanthus naucleoides* (HAYATA)** Gen. Ind. p. 34, (pro parte, non DC.).

HAB. Koteisho.

Differs from *C. naucleoides* DC. in having quite glabrous leaves; and from *C. ratoensis*, in the corolla which is hirsute inside and in the glabrous leaves.

***Cephalanthus ratoensis* HAYATA sp. nov.** Frutex, ramuli teretes rubescentes tenuissime hirsuti. Folia opposita chartacea oblonga vel ovato-oblonga apice acuta basi rotundata vel truncata 8 cm. longa  $3\frac{1}{2}$  cm. lata supra subglabra subtus tenuiter villosa margine integra, petiolis 8 mm. longis tenuiter hirsutis, stipulis interpetiolaribus late triangularibus apice cuspidatis 3 mm. longis. Capitulum florium globosum 3 cm. in diametro axillare solitarium vel terminale, pedunculo divaricato  $2\frac{1}{2}$  cm. longo. Receptaculum globosum dense hirsutum, paleis (bracteolis) linearis-clavatis dense hirsutis  $1\frac{1}{2}$  mm. longis. Calyx sessilis obconicus 3 mm. longus 2 mm. latus deorsum glaber sursum tenuiter villosus apice 4-lobatus, lobis late triangularibus 1 mm. latis  $\frac{1}{4}$  mm. longis intus dense villosus. Corolla 7 mm. longa tubulosa apice 2 mm. lata extus glabra apice 4-lobata, lobis oblongo-rotundatis  $1\frac{1}{2}$  mm. longis 1 mm. latis apice rotundatis basi haud contractis; corolla intus tenuiter barbata vel subglabra. Stamina 4, infra sinus inter lobos corollae disposita sessilia, antheris oblongo-linearibus 1 mm. longis apice obtusis basi sagittatis. Glandulae inter sinus lobii corollae dispositae nigres. Stylus filiformis longe exsertus glaber 8 mm. longus apice clavatus.

*Cephalanthus naucleoides* HAYATA (non DC.) in Gen. Ind. p. 34, (pro parte).

HAB. Giranchō : Ratō.

Differs from *C. glabrifolia* in the leaves which are tomentose beneath, and in the corolla which is nearly glabrous inside.

### *Adina* SALISB.

***Adina racemosa* MIQ.; HAYATA Gen. Ind. p. 34.**

HAB. Giranchō : Tōō, leg. S. NAKAI; Arisan, leg. G. NAKAHARA.

Flowers being too young, the determination is rather conjectural.

*Dentella* FORST.

**Dentella Matsudai** HAYATA sp. nov. Herba diffusa ramosissima repens. Caulis tetragonus subglaber. Folia opposita spatulata vel oblanceolata 5-6 mm. longa  $1\frac{1}{2}$  mm. lata apice obtusa vel opposita basi attenuata ad petiolum abeuntia integra utraque pagine glabra vel setuloso-hirsuta, petiolis subnullis, stipulis interpetiolaribus triangularibus 1 mm. longis totiusque latis glabris. Flores axillares vel terminales solitarii sessiles. Calyx obconico-tubulosus  $2\frac{1}{2}$  mm. longus  $1\frac{1}{2}$  mm. latus apice 5-lobatus basi setulosis apice glanduliferis dense obtectus sursum subglaber, lobis longe triangularibus 1 mm. longis  $\frac{1}{3}$  mm. latis acuminatis margine setulosis. Corolla obconico-campanulata 5 mm. longa  $2\frac{1}{2}$  mm. lata glabra apice 5-lobata, lobis triangularibus 1 mm. longis totiusque latis apice acutis, tubo corollæ extus glabro intus tenuiter hirsuto. Stamina 5, infra medium tubi affixa, filamentis filiformibus 1 mm. longis, antheris linearibus  $\frac{1}{2}$  mm. longis. Stylus minutus columnaris  $1\frac{1}{2}$  mm. longus medio sursum 2-lobatus, lobis erectis 1 mm. longis glabris. Ovarium inferum globosum 1 mm. in diametro 2-loculare, loculis  $\infty$ -ovulatis. Fructus capsulares globosi  $2\frac{1}{2}$  mm. in diametro dense glanduloso-setulosi apice tubo calycis coronati. Semina numerosa globoso-angularia  $\frac{1}{3}$  mm. diametro, testis minute reticulatis.

HAB. Ako, leg. Y. MATSUDA, Aprili. 1913.

Near *Dentella repens* FORST; but differs from it in having much smaller leaves and densely barbate fruits.

*Hedyotis* LINN.

**Hedyotis kuraruensis** HAYATA sp. nov. Herba subfruticosa 30-40 cm. alta; caulis tetragonus glaber ad faciem sulcatus. Folia opposita herbacea membranacea in vivo crassiuscula oblonga vel oblongo-ovalia apice acuta vel acuminata basi rotundata vel truncata ad extremitatem subito ad petiolum abeuntia margine integra utraque pagine subglabra vel tenuissime hirsuta, petiolis 8 mm. longis adpresso hirsutis, stipulis interpetiolaribus late triangularibus hirsutis 2 mm. longis cuspidiatis. Flores ad axillas foliorum densissime fasciculati sessiles, bracteis minutis linearibus 2-3 mm. longis utroque latere

basis lobis triangularibus instructis inter flores internixtis ciliolatis. Calyx obconico-campanulatus 5 mm. longus 4 mm. latus tenuiter hirsutus, tubo  $1\frac{1}{2}$  mm. longo, limbo 5-lobato, lobis late linearibus 3 mm. longis 1 mm. latis intus glabris extus tenuiter hirsutis. Corolla campanulata extus glabra 4 mm. longa apice prope medium sursum 4-lobata, lobis oblongo-linearibus 2 mm. longis  $\frac{2}{3}$  mm. latis apice obtusis dorso setuloso-hirsutis intus glabris basi haud contractis, corollæ tubo intus hirsuto. Stamina 4, filamentis ultra tubum corollæ exsertis  $\frac{1}{4}$  mm. longis, antheris linearibus 1 mm. longis vel  $1\frac{1}{4}$  mm. latis apice obtusis. Stylus columniformis apice 2-lobatus, lobis oblongis stigmatosis.

HAB. Kuraru, leg. B. HAYATA et S. SASAKI, Juni. 1912.

Near *Hedyotis auricularia* W. et Arn. (BENTH. Fl. Hongk. p. 150); but differs from it in having much thinner leaves with very slender, not at all prominent, nerves underneath.

#### *Anotis* DC.

***Anotis formosana*** HAYATA sp. nov. Herba basi procumbens sursum ascendens 10–20 cm. longa; glabra gracilis. Folia opposita ovata vel ovato-oblonga chartacea vel membranacea 1– $1\frac{1}{2}$  cm. longa 12 mm. lata apice acuta basi obtusa vel rotundata integra supra hirsuta subtus ad venas tenuiter hirsuta, petiolis 2–3 mm. longis, stipulis late triangularibus 3 mm. longis 2 mm. latis laceratis membranaceis. Flores versus apicem caulis cymose dispositi, bracteis digitiformibus laceratis 1– $1\frac{1}{2}$  mm. longis. Calyx obconico-campanulatus  $2\frac{1}{2}$  mm. longus glaber 2 mm. latus 4-lobatus, lobis oblongo-ovatis  $1\frac{1}{2}$  mm. longis  $\frac{2}{3}$  mm. latis apice obtusis glabris. Corolla campanulata 4 mm. longa 3 mm. lata glabra 4-lobata, lobis oblongo-triangularibus  $2\frac{1}{2}$  mm. longis  $1\frac{1}{2}$  mm. latis apice obtusis. Stamina 4 sessilia, antheris linearibus  $1\frac{1}{4}$  longis  $\frac{1}{4}$  mm. latis. Stylus glaber filiformis 4 mm. longus apice breviter 2-lobatus.

HAB. Bonbonzan, Taiheizan, leg. B. HAYATA et S. SASAKI, Mai. 1917.

NOTE: Leaves green dull, above; corolla white, lobes 3–4; calyx green.

#### *Oldenlandia* LINN.

***Oldenlandia diffusa*** ROXB.; HOOK. f. Fl. Brit. Ind. III. p. 65; FORBES

et HEMSL. Ind. Fl. Sin. I. p. 377; MATSUMURA Ind. Pl. Jap. II.-2, p. 592.

HAB. Suisha, Shinjō, Kelung.

New to the flora of Formosa.

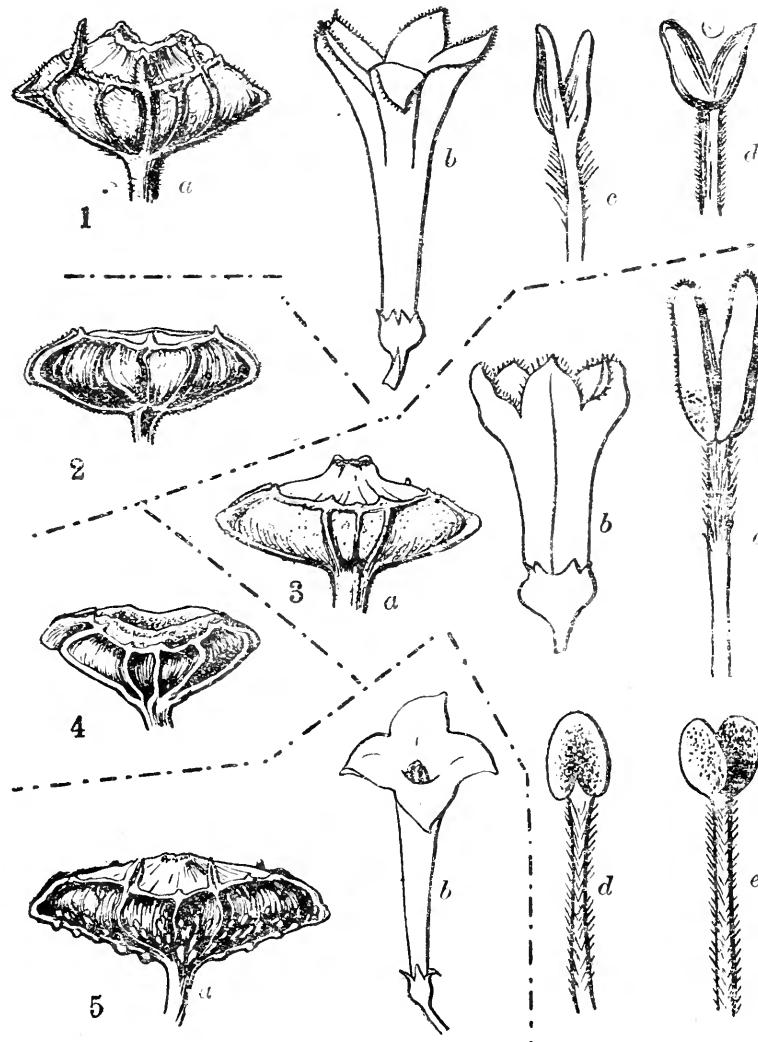


Fig. 23; *Ophiorrhiza* spp.; 1, *O. dimorphantha* HAY.; a, a fruit; b, a flower; c, the stigma of a male flower; d, the stigma of a female flower; 2, *O. inflate* MAXIM.; 3, *O. monicola* HAY.; a, a fruit; b, a flower; c, the stigma of a male flower; d, a stigma of a female flower; e, the same, seen from front; 4, *O. parviflora* HAY.; 5, *O. stenophylla* HAY.; a, a fruit; b, a flower.

*Ophiorrhiza* LINN.

***Ophiorrhiza dimorphantha*** HAYATA (Fig. 23-1) Gen. Ind. p. 36.

HAB. Daitonzan, Agioku, Kelung.

NOTE: Corolla hirsute inside, lobes 5, tube broader; ovary smooth, but hirsute.

***Ophiorrhiza inflata*** MAXIM. (Fig. 23-2) Mélang. Biol. XII. p. 729; MATSUM. Ind. Pl. Jap. II.-2, p. 593.

HAB. Ōchōbi; Urai; Agioku; Shinjō; Taiko; Yeyama.

NOTE: Flowers white glabrous. New to the flora of Formosa.

***Ophiorrhiza monticola*** HAYATA (Fig. 23-3) Gen. Ind. p. 36.

HAB. Arisan, ad 2,500 m. alt.

***Ophiorrhiza parviflora*** HAYATA (Fig. 23-4) Gen. Ind. p. 36.

HAB. Kwashōtō; Kōtōshō; Teraso; Kusukusu.

NOTE: Flowers white.

***Ophiorrhiza stenophylla*** HAYATA (Fig. 23-5) Gen. Ind. p. 36.

HAB. Sōseikyaku; Tōgō et Kamiyodani; Urai; Raga; Agioku, leg. B. HAYATA.

NOTE: Corolla white, lobes 4-5, tube very slender, glabrous within; ovary muricate glabrous.

*Mussænda* LINN.

***Mussænda albiflora*** HAYATA sp. nov. Frutex scandens, ramis et ramulis teretibus hirsutis. Folia opposita oblonga 4-5 cm. longa 3-3½ cm. lata apice acuminata basi obtusa vel acuta margine integra chartacea utraque pagine tenuissime hirsuta, petiolis 3-4 mm. longis tenuiter hirsutis, stipulis interstipularibus dense hirsutis 2-partitis, partibus subulato-triangularibus 4-5 mm. longis apice subulatis glabris basi dense hirsutis. Cymæ terminales dense floriferæ hirsutæ, bracteis triangulari-linearibus 5 mm. longis hirsutis acuminatis. Flores fere sessiles. Calyx tubiformis cum lobis 6-7 mm. longus 2 mm. latus, tubo 1-2 mm. longo, limbo 5-partito, partibus linearibus erectis subulatis 4-6 mm. longis basi 1 mm. latis extus hirsutis intus glabris. Corolla tubulosa 13-15 mm. longa extus hirsuta, tubo 1 cm. longo 2 mm. lato, limbo

5-lobato, lobis ovatis 3 mm. longis 2 mm. latis apice acuminatis basi contractis integris extus hirsutis intus glabris, limbo fauce densissime albo-barbato, tubo deorsum intus glabro. Stamina 5 fauce tubi affixa, filamentis filiformibus ad tubum affixis, antheris linearibus 2 mm. longis  $\frac{1}{4}$  mm. latis apice obtusis. Stylus glaber 5 mm. longus apice 2-lobatus, lobis  $1\frac{1}{2}$  mm. longis.

HAB. Suisha, leg. B. HAYATA, Mai. 1912.

Near *M. pubescens*, but differs from it in having much shorter anthers and in the nearly sessile flowers. The species is, so far, only found in this region of the island.

*Chomelia* LINN.

**Chomelia gracilipes** HAYATA sp. nov. Frutex; rami et ramuli gracillimi glabri, cortice plus minus soluto. Folia opposita membranacea vel tenuiter chartacea obovata vel oblonga 9–13 cm. longa  $3\frac{1}{2}$  cm.– $4\frac{1}{2}$  cm. lata apice caudato-acuminata basi cuneata margine integra supra glabra subtus tenuissime hirsuta vel glabra, petiolis 1–1 $\frac{1}{2}$  cm. longis adpresso hirsutis, stipulis interpetiolaribus triangularibus 2 mm. longis glabris. Cymæ terminales gracillimæ 5–6 cm. longæ 10 cm. latae a basi ternatim ramosæ hirsutæ, bracteis minutis linearibus 2 mm. longis hirsutis, pedicellis gracillimis tenuiter hirsutis bracteolis minutis 1–2 instructis. Calyx tubulosus  $2\frac{1}{2}$  mm. longus  $1\frac{1}{2}$  mm. latus apice 5-dentatus, dentibus late triangularibus  $\frac{1}{2}$  mm. longis et latis margine erosis, intus inter dentes glandulis instructus glaber. Corolla hypocrateriformis glabra, tubo 6 mm. longo  $1\frac{1}{2}$  mm. lato extus glabro intus hirsuto, limbo 5-partito, paribus spathulato-linearibus 1 cm. longis 3 mm. latis apice obtusissimis utraque pagine glabris intus basi barbatis ad faucem barbatis. Stamina 5, filamentis  $1\frac{1}{2}$  mm. longis ad sinus inter lobos corollæ affixis glabris, antheris linearibus 1 cm. longis  $\frac{2}{3}$  mm. latis apice obtusis. Stylus 2 cm. longus basi hirsutus sursum glaber incrassatus ad apicem brevisime 2-lobatus, lobis minutis  $\frac{1}{2}$  mm. longis stigmatosis. Ovarium inferum cum tubo calycis connatum 2-lokulare, loculis 5–6-ovulatis.

HAB. Akō: Raisha, leg. Y. MATSUDA, No. 1054.

Near *Chomelia attenuata* (Hook. f.); but differs from it in the very much slender cymes with larger flowers.

**Chomelia kotoensis** HAYATA sp. nov. Arborescens? rami validiusculi. Folia opposita oblongo-obovata 17–22 cm. longa 9–11 cm. lata apice breve-cuspidato-acuta basi cuneata margine integra in exsiccato membranacea vel tenuiter coriacea utraque pagine glabra, petiolis 1–2 cm. longis, petiolis interpetiolaribus basi se connatis tubum brevissimum formantibus apice triangularibus 3–5 mm. longis. Cymæ terminales 10 cm. longæ 15 cm. latae a basi ramosæ, ramis divaricatissimis glabris, bracteis linearibus 2–3 mm. longis. Flores ignoti. Fructus globosus 1 cm. in diametro glaber. Semina ignota.

HAB. Kōtōshō, leg. K. MIYAKE.

Differs from *C. corymbosa* in having much looser corymbs and in the very much larger obovate leaves.

**Chomelia lancifolia** HAYATA sp. nov. Frutex, rami et ramuli graciles plus minus pubescentes. Folia opposita tenuiter coriacea lanceolata vel ob-lanceolata 9–10 cm. longa 2–2½ cm. lata apice acuminata basi attenuata margine subintegra utraque pagine glabra, costa supra impressa subtus elevata, venis lateralibus tenuissimis subtus tenuissime elevatis, petiolis 5–6 mm. longis, stipulis interpetiolaribus triangularibus cuspidatis. Cymæ terminales glabrae plus minus pubescentes 6 cm. longæ 10 cm. late a basi ternatim ramosæ, bracteis minutis linear-lanceolatis, pedicellis gracilibus 10 mm. longis adpresso pubescentibus, bracteolis duabus ovatis instructis. Calyx urceolato-tubulosus 3 mm. longus 2 mm. latus apice 5-dentatus, dentibus late triangularibus 1 mm. latis ½ mm. longis margine plus minus hirsutis. Corolla hypocrateriformis, tubo 5 mm. longo 1 mm. lato, limbo 5-partito, partibus patentissimis recurvis spathulato-linearibus 11 mm. longis 3 mm. latis apice obtusissimis basi attenuatis, utraque pagine glabris, tubo corollæ extus glabro intus barbato ad faucem hirsuto. Stamina 5 ad sinus inter lobos corollæ affixa, filamentis brevibus 2 mm. longis glabris, antheris linearibus 10–11 mm. longis apice obtusis basi 2-lobatis. Stylus 1½ cm. longus supra usque ad medium hirsutus apice 2-lobatus vel haud lobatus.

HAB. Hiiranjan, leg. B. HAYATA et S. SASAKI, Juni. 1912.

Near *Chomelia attenuata* (Hook. f.); but distinguishable from it in the pubescent pedicels and peduncles with much larger flowers.

*Randia* LINN.

**Randia sinensis** ROEM.; BENTH. Fl. Hongkong. p. 155; HEMSL. Ind. Fl. Sin. I. p. 382; HAYATA Gen. Ind. p. 36.

HAB. Inter Rōnō et Kōsenpo, leg. B. HAYATA, Aprili. 1917.

**Randia suishænsis** HAYATA sp. nov. Frutex vel arborescens. Folia lanceolata vel oblanceolata tenuiter coriacea opposita 8–10 cm. longa  $2\frac{1}{2}$ – $3\frac{1}{2}$  cm. lata apice acuminata basi attenuata margine integra utraque glabra supra nitida, costis venisque supra minus subtus plus elevatis, petiolis 1 cm. longis, stipulis triangulari-cuspidatis 3–4 mm. longis interpetiolaribus. Cymæ versus apicem approximatum paniculatum dispositæ, 3 cm. longæ bracteis oppositis triangulari-cuspidatis  $2\frac{1}{2}$  mm. longis 2 mm. latis coriaceis, pedicellis brevibus hirsutis ad basin calycis articulatis. Calyx glaberrimus tubiformis 4 mm. longus  $2\frac{1}{2}$  mm. latus apice 5-lobatus, lobis triangularibus 1 mm. longis totiusque latus apice acutissimis glabris. Corolla subrotata glabra, tubo 3 mm. longo 2 mm. lato intus glabro, limbo 5-partito, partibus linearibus 9 mm. longis  $2\frac{1}{2}$ –3 mm. latis apice acutis basi haud vel plus minus contractis integris utraque page glabris sed intus versus basin ad faucem dense hirsutis. Stamina 5 ad faucem tubi corollæ affixa, filamentis brevissimis 1 mm. longis, antheris linearibus  $7\frac{1}{2}$  mm. longis 1 mm. latis apice acuminatis basi obtusis brevissime 2-lobatis. Stylus columnaris 12 mm. longus glaber incrassatus sursum stigmatosus 5-sulcatus. Fructus ovoideo-globosus 6 mm. longus 5 mm. latus 2-locularis polyspermus, seminibus liberis ad placentas aggregatis subtriangularibus 2 mm. longis latere complanatis, albuminibus carnosis.

*Randia densiflora* HAYATA (pro parte) Gen. Ind. p. 36 non BENTH.

HAB. Suisha, leg. B. HAYATA, Aprili. 1916.

Differs from *R. densiflora* in the corolla which is quite glabrous outside; and from *R. acutidens* in the much shorter corolla-tubes and in the longer corolla-lobes.

*Diplospora* DC.

**Diplospora ? buisanensis** HAYATA sp. nov. (Fig. 24). Frutex; rami et ramuli validiusculi, cortice gradatim soluto rubro-purpurascenti. Folia opposita

elongato-oblonga vel lanceolata 6–7 cm. longa 2 cm. lata apice acuminata basi attenuata margine integra tenuiter coriacea utraque pagine glabra, petiolis 3–5 mm. longis, stipulis interpetiolaribus late triangularibus coriaceis 3–4 mm.



Fig 24; *Diprosopa?* *buisanensis* HAYATA; 1, a branch; 2, a flower; 3, corolla of the same flower, expanded; 4, a stamen, seen from different sides; 5, ovary.

longis. Flores ad cicatrices foliorum lateribus ramulorum fasciculatim breve cymosim dispositi, cymis  $1\frac{1}{2}$  cm. longis tenuiter hirsutis, bracteis oppositis secundatis brevissimis, pedicellis 3 mm. longis. Calyx campanulatus tenuiter hirsutus 2 mm. longus totiusque latus ore circ. integer vel leviter 4-dentatus. Discus pulviniformis supra ovarium dispositus. Corolla campanulata 8 mm. longa extus glabra intus plus minus hirsuta, tubo 3 mm. longo basi 2 mm. lato, 4-lobata, lobis oblongis 6 mm. longis  $3\frac{1}{2}$  mm. latis apice acutis obtusis integris basi haud vel vix contractis. Stamina 4 ad basin loborum corollæ alternatim disposita; filamentis validiusculis brevibus  $1\frac{1}{2}$  mm. longis complanatis tenuiter hirsutis, antheris oblongo-linearibus 3 mm. longis  $1\frac{1}{2}$  mm. latis apice obtusis basi 2-lobatis. Stylus glaber columniformis 4 mm. longus apice 3-lobatus, lobis linearibus. Ovarium inferum 2-loculare, loculis  $\infty$ -ovulatis.

HAB. Buizan, leg. Y. MATSUDA, Aug. 1918.

### *Ixora* LINN.

***Ixora graciliflora*** HAYATA sp. nov. Frutex; rami et ramuli cinerascentes rugosi. Folia opposita obovato-elliptica chartacea  $6\frac{1}{2}$  cm. longa 2 cm. lata apice obtusa basi obtusissima vel truncata margine integra utraque glabra, costa supra impressa subtus elevata, venis utraque pagine gracilibus tenuiter elevatis, venis lateralibus rectis, petiolis subnullis vel brevissimis, stipulis interpetiolaribus subulato-triangularibus 3 mm. longis 1 mm. latis glabris. Panicula cymosa singulis terminalis, pedunculo 2 cm. longo, pedicellis brevisimis subglabris, bracteolis minutis. Calyx tubulosus  $1\frac{1}{2}$  mm. longus totiusque latus ad orem 4-dentatus subglaber. Corolla hypocrateriformis subglabra, tubo gracili  $2\frac{1}{2}$  cm. longo 1 mm. in diametro erecto subglabro, limbo patentí 4-partito, partibus oblongis 7 mm. longis  $3\frac{1}{2}$  mm. latis apice obtusissimis basi plus minus contractis margine minute hirsutis vel haud hirsutis. Stamina 4 ad faucem tubi corollæ affixa subsessilia, antheris linearibus 4 mm. longis  $\frac{2}{3}$  mm. latis apice acutis basi ad medium 2-partitis. Stylus glaber filiformis tubo corollæ æquilongus apice 2-lobatus, lobis plus minus dilatatis linearibus 3 mm. longis  $\frac{1}{2}$  mm. latis.

HAB. Kwashōtō, leg. T. SŌMA, Juli. 1913.

Near *I. chinensis*, but differs from it in the much smaller leaves and

much slenderer flowers with much narrower lobes.

*Psychotria* LINN.

*Psychotria?* *kotoensis* HAYATA sp. nov. Frutex; rami pallido-cenerascentes glabri cicatricibus foliorum 3-4 mm. in diametro notati. Folia opposita chartaceo-membranacea oblonga 10-15 cm. longa 4½-6 cm. lata apice acuta basi cuneato-attenuata margine integra utraque pagine glabra, costis venis utraque pagine tenuissime elevatis, petiolis 3-6 cm. longis, stipulis ignotis. Flores ignoti. Fructus ad apicem caulis aggregati pedicellati, pedicellis 4-5 mm. longis. Baccæ oblongo-globosa 1 cm. longa 8 mm. lata apice rotundata 2-cocca.

HAB. Kōtōshō, leg. K. MIYAKE, Nov. 1899.

*Lasianthus* JACK.

*Lasianthus hirananensis* HAYATA sp. nov. Frutex; rami et ramuli graciles in exsiccato nigricantes hirsuti vel subglabri. Folia opposita tenuiter coriacea vel chartacea oblonga vel oblongo-obovata 8-9 cm. longa 4-4½ cm. lata apice subito acuta ad summum aristulata basi obtusissima vel rotundata margine repanda vel subintegra supra glabra subtus hirsuta, petiolis 5 mm. longis hirsutis, stipulis interpetiolaribus subulato-triangularibus 7 mm. longis dense hirsutis. Flores ignoti. Fructus ad axillas foliorum fasciculati hirsuti in exsiccato nigricantes 4-5-cocci. Semina ignota.

HAB. Hiranzan, leg. B. HAYATA et S. SASAKI, Juni. 1912.

*Psychotria macrophylla* HAYATA sp. nov. Suffrutex scandentissimus prostratus sed ad nodos haud radicantes; rami teretes 4-5 mm. in diametro g'aberimi. Folia opposita chartacea vel tenuiter coriacea obovata 8-10 cm. longa apice triangulari-obtusa vel breve cuspidato-obtusa basi longe attenuata margine integra utraque pagine glabra, costa supra impressa subtus elevata, venis gracibus utraque elevatis, petiolis 3 mm. longis. Fructus cymosi, cymis terminalibus, bracteis et bracteolis instructis, baccis oblongo-globosis 5 mm. longis 4 mm. latis tenuiter 10-sulcatis, exocarpiis tenuibus, endocarpiis crustaceis, 2-coccais.

HAB. Bonin: Chichijima, leg. H. HATTORI, 1905.

As the plant bears an aspect remarkably different from that of *P. serpens*, it should be better regarded as a distinct species. The leaves of the new plant are very much larger than those of *P. serpens*, and the branches of the former are scandent and prostrate, but not rooting as is the case with the latter species. I have examined all the specimens of *P. serpens* from Japan, Formosa and Hongkong; but none does ever seem to approach to the Bonin plant in the shape of the leaves and in the habit.

Near *Lasianthus formosensis* MATSUM., but differs from it in lewing leaves with round base, and in the much longer hirsute stipules.

**Lasianthus microstachys** HAYATA sp. nov. Frutex; rami et ramuli gracillimi subglabri. Folia opposita chartacea vel tenuiter coriacea oblonga 7–10 cm. longa 3 cm. lata apice cuspidato-acuminata basi cuneata vel acuta marginē integra supra glabra subtus ad costas venas dense hirsuta, costis venisque supra tenuiter impressis subtus prominente distincteque elevatis, petiolis 3–4 mm. longis hirsutis, stipulis subnullis ad pilos densos reductis. Cymæ paucæ-floratae breve pedunculatae vel subsessiles, axillares 5 mm. longæ vel brevissimæ. Calyx urceolato-campanulatus  $3\frac{1}{2}$  mm. longus 3 mm. latus, tubo  $1\frac{1}{2}$  mm. longo totiusque lato paucæ hirsuto cum ovario connato, limbo campanulato extus hirsuto intus glabro a medio sursum 5-lobato, lobis linearisubulatis  $1\frac{1}{2}$  mm. longis basi dilatatis hirsutis. Corolla ignota. Fructus lato globosus 4 mm. latus 3 mm. longus 5-lobatus 5-coecus, exocarpiis carnosus, endocarpiis (testis cocci) crustaceis semi-oblongis  $2\frac{1}{2}$  mm. longis  $1\frac{1}{2}$  mm. latis. Semina ignota.

HAB. Ōchōbi, leg. B. HAYATA, Mai. 1916.

Near *Lasianthus micranthus* HOOK. f. (in Fl. Brit. Ind. III. p. 190); but distinguishable from it in having much smaller leaves with cuneate base.

**Lasianthus parvifolius** HAYATA sp. nov. Frutex; rami et ramuli graciles vel tenuiter hirsuti subtetragoni. Folia opposita tenuiter coriacea vel chartacea 5 cm. longa  $2\frac{1}{2}$  cm. lata apice caudato-acuminata basi acuta vel obtusa integra supra glabra subtus tenuiter hirsuta, petiolis 8 mm. longis hirsutis, stipulis interpetiolaribus 1–2 mm. longis triangularibus hirsutis acutis. Flores ad axillas foliorum fasciculati subsessiles, bracteolis minutis triangularibus hirsutis. Calyx obconicus 3 mm. longus totiusque latus hirsutus, limbo 5-lobato, lobis triangularibus 1 mm. longis totiusque latis acutissimis hirsutis intus glabris. Corolla tubiformis 1 cm. longa 3 mm. lata extra hirsuta apice 5-lobata, lobis oblongis 3 mm. longis 2 mm. latis apice acutis basi haud contractis extus tenuiter hirsutis intus barbatis, tubo intus dense barbato. Stamina 5 subsessilia, antheris linearibus  $1\frac{1}{2}$  mm. longis  $\frac{1}{4}$  mm. latis apice obtusis. Discus pulviniformis supra ovarium inferum insitus. Stylus columniformis glaber 3 mm. longus apice incrassatus tenuiter 5-lobatus.

HAB. Arisan: Inter Taroyen et Funkiko, leg. B. HAYATA, Jan. 1912.

Near *Lasianthus formosensis*, but differs from it in having much smaller leaves and glabrous branches.

***Pæderia*** LINN.

***Pæderia uraiensis*** HAYATA sp. nov. Scandens et volubilis; caules et rami teretes fulvo-tomentosi. Folia opposita membranacea vel chartacea ovata oblonga vel lanceolata apice acuminata basi obtusa vel cordata 7–15 cm. longa 2½–10 cm. lata minute eroso-serrulata vel subintegra supra tenuiter subtus dense villosa, petiolis 3–6 cm. longis. Flores paniculati, paniculis axillaribus vel terminalibus 10–12 cm. longis tenuiter villosis, pedicellis hirsutis nullis vel 3–4 mm. longis, bracteolis elongato-triangularibus 2 mm. longis ⅔ mm. latis apice 2-lobatis, lobis acutis. Calyx campanulatus 2 mm. longus totiusque latus, limbo 5-lobato, lobis triangularibus 1 mm. longis ⅔ mm. latis apice acutis. Corolla tubuloso-campanulata 6–7 mm. longa 3–4 mm. lata intus hirsuta apice 5-lobata, lobis triangularibus 1 mm. longis 1½ mm. latis apice acutis. Stamina 5 tubo corollæ ad altitudines inaequales affixa, filamentis glabris ½ mm. longis, antheris linearibus 2½ mm. longis ¼ mm. latis. Stylus basi singularis, parte singulari 1 mm. longa, a basi sursum 2-partitus, partibus 4–5 mm. longis filiformibus hirsutis stigmatosis.

HAB. Tøyenchō: Uraisha, leg. S. SASAKI, Nov. 1908.

Near *P. villosa* HAY.; but distinguishable from it in the much smaller flowers and more densely villose leaves.

***Pæderia villosa*** HAYATA sp. nov. Scandens et volubilis; caules et rami teretes glabri. Folia opposita ovata vel oblongo-cordata 6–10 cm. longa 3–6 cm. lata apice caudato-acuminata basi rotundata vel plus minus cordata margine eroso-serrulata chartacea supra tenuiter subtus dense villosa, venis costisque supra minus subtus plus elevatis gracilibus, petiolis 3 cm. longis glabris. Flores laxe paniculati, paniculis terminalibus 30–40 cm. longis subglabris, pedicellis brevibus vel nullis. Calyx campanulatus 2 mm. longus glaber totiusque latus, limbo 5-lobato, lobis triangularibus 1 mm. latis ½ mm. longis obtusis. Corolla tubulosa 8–9 mm. longa 2½ mm. lata apice 5-lobata, lobis triangularibus 1 mm. longis obtusis, tubo intus hirsuto basi fasciculis

pilorum instructo. Stamina 5 tubo corollæ affixa, filamentis brevibus, antheris linearibus  $1\frac{1}{2}$  mm. longis  $\frac{1}{2}$  mm. latis. Stylus 7-8 mm. longus glaber alte 2-fidus. Discus obconicus apicem ovarii obtectus.

HAB. Chūho, leg. Y. SHIMADA, Sept. 1915.

Near *P. tomentosa*; but differs from it in having leaves which are very scabrous above and densely villose beneath.

### *Galium* LINN.

**Galium trifidum** MICHX.; MAXIM. Mélang. Biol. IX. p. 260; MATSUM.

Ind. Pl. Jap. II.-2, p. 588.

HAB. Laco Suisha, leg. B. HAYATA, Aprili. 1916.

Exactly identical with the Japanese species. Fruits glabrous; corollalotes 3, white. New to the flora of Formosa.

### *Damnacanthus* GÄRTN.

**Damnacanthus Tashiroi** HAYATA sp. nov. Frutex scandentissimus; rami et ramuli graciles glabri. Folia opposita crasse coriacea oblonga oblongo-ovata 6-7 cm. longa  $2\frac{1}{2}$ -3 cm. lata apice acutissima basi cuneato-attenuata margine integra utraque pagine glabra supra nitida subtus pallida, costa supra impressa subtus elevata, venis supra haud vel vix elevatis subtus non vires divaricatis rectis, petiolis 1 cm. longis glabris, stipulis ignotis. Flores ignoti. Fructus ad axillulas foliorum solitariter vel fasciculatim dispositi, pedicellis 5 mm. longis. Racca depresso-globosa 4 mm. longa 5 mm. lata apice dentibus calycis coronata 4-sperma, seminibus ovoideis 3-4 mm. longis.

HAB. Loochoo, leg. Y. TASHIRO, Mart. 1887.

## Ericaceæ.

### *Rhododendron* LINN.

**Rhododendron formosanum** HEMSL. in Kew Bulletin 1895, p. 183, n. 200.

" Ramulis floriferis cito glabrecentibus crassis cinereis, foliis confertis distincte petiolatis primum lanato-tomentosis cito glabrecentibus crassis coriaceis suberectis anguste oblanceolatis elongatis obtusissimis deorsum longe attenuatis margine incrassatis supra subnitidis minute reticulatis, costa angustissima impressa subtus cinereis costa elevata, petiolo subterete angustissime canaliculato, cataphyllis arcte imbricatis inferioribus coriaceis brevibus rotundatis ciliolatis superius laxis elongatis terribus mollibus ferrugineo-pulverulentis, floribus mediocribus racemosis racemis terminalibus vel pseudoterminalibus 7-10 floris, pedicellis longis, calyce ferrugineo-puberulo brevissimo obscure late lobato, corolla intus extusque glabra breviter lateque lobata, lobo pestico emarginato, staminibus 10 inclusis, filamentis infra medium incrassatis hirsutis,

ovario furfuraceo 5-loculari, stylo glabro crasso stamina superanti, capsula ignota.

"Habitat.—Formosa: Sooth Cape, A. HENRY, 1916.

"Folia 3-6 poll. longa, maxima 1 poll. lata, petioli 6-12 lin. longi. Flores circiter 1½ poll. longi et diametro. Pedicelli 1½ poll. longi. Stylus circiter 1½ poll. longus."

HAB. Sōtenzan, Randaizan, Shinsuiye, Yeg'riyama; Risekizan; Mushazan, Goshizan, Shojodaisan.

**Rhododendron nankotaisanense** HAYATA sp. nov. Frutex; rami validi-  
diuseuli, cortice cinerascenti; ramulis sursum tenuiter floccoso-tomentellis.  
Folia lanceolata 9 cm. longa 2½ cm. lata apice acuta ad summum apiculata  
basi obtusa integra utraque pagina glabra, costa supra impressa subtus  
elevata, venis lateralibus supra haud visis subtus gracillime elevatis visis,  
petiolis 2 cm. longis supra sulcatis. Flores corymbosi, corymbis terminalibus  
solitariis cum floribus 5 cm. longis totiusque latis, pedicellis 2 cm. longis  
glabris. Calyx cypeliformis margine 5-lobatus, lobis brevissimis late triangularibus  
obtusis glabris. Corolla obconico-infundibuliformis 2½ cm. longa totiusque  
lata glabra apice 5-lobata, lobis rotundatis latioribus 12 mm. longis  
15 mm. latis apice rotundatis apice emarginatis, inaequalibus 3 majoribus, 2  
minoribus, glabra. Stamina 10 infra ovarium in disco inserta, filamentis inaequalibus  
1-3 cm. longis glabris, antheris obovatis 3½ mm. longis 2 mm. latis apice  
truncatis 2-porosis basi obtusis plus minus emarginatis. Ovarium cylindricum  
4 mm. longum 2 mm. latum glabrum 5-sulcatum, stylo filiformi 2½ cm. longa  
glabro apice plus minus clavato-dilato stigmatoso.

HAB. Nankotaisan, Aprili. 1917, leg. S. SASAKI, No. 57, (typus!).

Near *Rhododendron Morii* HAYATA, but differs from it in the quite  
glabrous ovary.

### Diapensiaceæ.

#### *Shortia* TORR. et GR.

**Shortia transalpina** HAYATA (Fig. 25) Ic. Pl. Formos. III. p. 146.  
Descriptio aucta:—Bracteæ 2-3 basi floris dispositæ oblongo-triangulares 2-3  
mm. longæ basi cordatæ. Sepala 5 valde imbricata oblongo-triangularia 5  
mm. longa 3 mm. lata apice obtusa glabra. Corolla campanulata glabra  
5-6 mm. longa alte 5-lobata, lobis obovatis 5 mm. longis 2½-3 mm. latis  
apice obtusis versus apicem crenato-lobulatis, crenis obtusis paucis. Stamina

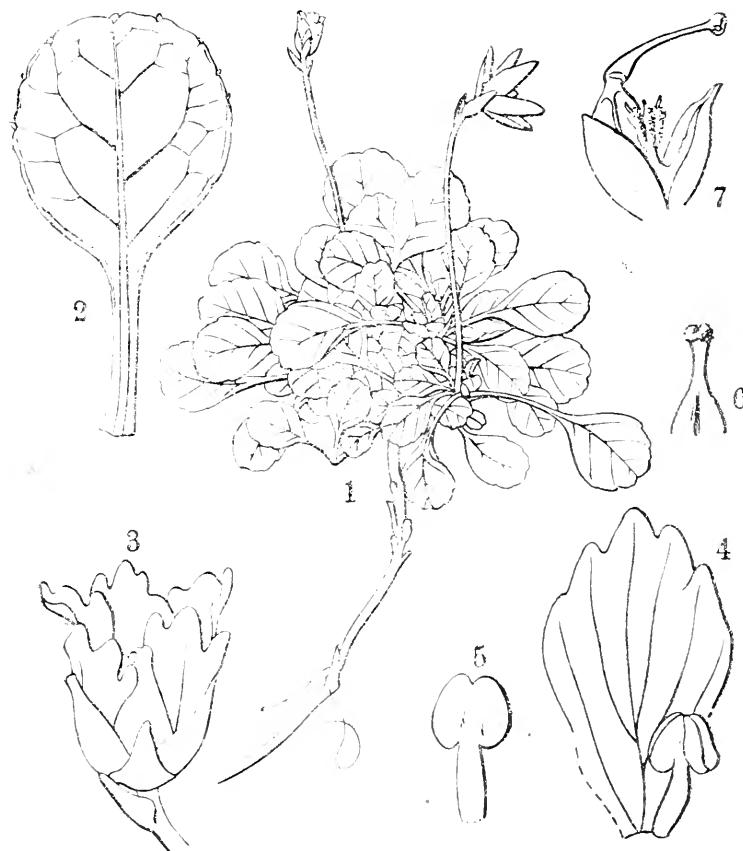


Fig. 25; *Shortia transalpina* HAYATA; 1, the plant; 2, a leaf; 3, a flower; 4, a corolla-lobe; 5, a stamen; 6, ovary; 7, a capsule.

5 lobis corolle alterna, filamentis glabris toto cum tubo corollæ connata, antheris cordatis 1 mm. longis apice retusis basi cordatis. Ovarium superius conico-globosum glabrum 1 mm. longum, stylo columnari  $1\frac{1}{2}$  mm. longo glabro apice stigmatoso.

HAB. Daibuzan, leg. Y. MATSUDA, Nov. 1918.

### Styraceæ.

#### *Alniphyllum* MATSUM.

*Alniphyllum Fauriei* PERKINS in ENGL. Pfl.-reich, Styrac. p. 93;

HAYATA Gen. Ind. p. 45.

HAB. Ōchōbi, leg. B. HAYATA, Mai. 1916, Shinjō, Heirinbi, leg. B. HAYATA.

*Styrax* LINN.

**Styrax kotoense** HAYATA Gen. Ind. Fl. Formos. p. 45. Frutex; ramuli cinereo-rubescentes flexuosi glabri. Folia alterna tenuiter coriacea vel chartacea ovato-oblonga 10–12 cm. longa 5–7 cm. lata apice caudato-acuminata vel acuta basi obliqua vel rotundata margine subintegra utraque pagine subglabra, costis venisque supra planis subtus prominente elevatis, venulis reticulatis utraque pagine elevatis, petiolis 1 cm. longis glabris. Fructus versus apicem ramorum axillares vel ad ramulos proprios dispositi, pedicellis circ. 2 cm. longis versus apicem incrassatis, calycibus accrescentibus late campanulatis glabris 9–10 mm. in diametro 5-lobatis, lobis late triangularibus; Capsulis ovoides apiculatis 1 cm. longis, pericarpiis crasso-coriaceis cinerascentibus, 1-spermis; seminibus oblongis 1 cm. longis profunde 5-sulcatis, testis crustaceis fulvescentibus; albuminis carnosis.

HAB. Kōtōshō, leg. T. KAWAKAMI et S. SASAKI; ibidem, leg. Y. TASHIRO, No. 14.

*Symplocos* LINN.

**Symplocos japonica** A. DC.; BRAND. in ENGL. Pfl.-reich, Symplocoe. p. 31.

*Symplocos lucida* SIEB. et ZUCC. Fl. Jap. p. 55. t. 24; MATSUM. Ind Pl. Jap. II.-2, p. 487.

HAB. Nōkōzan, ad 8,000 ped. alt., leg. R. KANEHIRA et S. SASAKI, Mart. 1918.

**Symplocos kiraishiensis** HAYATA sp. nov. (Pl. IV.) Frutex, rami et ramuli fuscentes tenuiter griseo-hirsuti recti. Folia minora lanceolata 4 cm. longa 10–12 mm. lata vel oblonga latiora apice acuminatissima plus minus falcata basi acuta vel cuneata integerrima utraque pagine glabra, costa supra elevata subtus plana, venis venulis utraque pagine tenuiter elevatis, coriacea, petiolis 3 mm. longis. Racemi axillares solitarii 1½ cm. longi, pedicellis 2 mm. longis basi 1-braeteatis, bracteis triangularibus 2 mm. longis 1½ mm. latis

acutis extus hirsutis, bracteolis basi floris oppositim dispositis elongato-triangularibus  $1\frac{1}{2}$  mm. longis crassiusculis. Calyx tubus (cum ovario) obconicus  $1\frac{1}{2}$  mm. longus paucis hirsutus totiusque latus, limbus campanulatus 3 mm. longus totiusque latus extus paucis hirsutus a medio sursum 5-lobatus, lobis oblongis apice obtusis margine ciliolatis 2 mm. longis  $1\frac{1}{2}$  mm. latis. Corolla campanulata 5 mm. longa totiusque lata, tubo 1 mm. longo, limbo 5-partito, lobis oblongis 3-4 mm. longis apice obtusissimis integris basi haud vel vix contractis. Stamina  $\infty$ , filamentis usque ad medium connatis 4-6 mm. longis glabris, antheris reniformibus  $\frac{2}{3}$  mm. longis fere bipartitis glabris. Ovarium inferius apice impressum hirsutum, stylo 4-5 mm. longo glabro, stigmate plus minus incrassato. Fructus ad racemos solitarii ellipsoidei  $1\frac{1}{2}$  cm. longi 7 mm. lati, pericarpiis incrassatis crustaceis 1 mm. crassis, 3-loculares; loculo uno fertili 2-spermo.

HAB. Kiraishi ad 12,000 ped. alt.; leg. Y. SHIMADA, Mart. 1918.

Near *S. morrisonicola* HAY.; but differs from it in the much thicker leaves with entire margin and in the much larger calyx.

**Symplocos Somai** HAYATA sp. nov. Frutex. Rami et ramuli fusco-purpurascentes, lenticellis minutis. Folia alterna coriacea oblonga vel ovato-oblonga 5 cm. longa 23 mm. lata apice caudata vel acuta ad summum obtusa basi acuta cuneata margine integra utraque glabra, costa supra impressa subtus elevata, venis venulis utraque pagine tenuissime elevatis gracillimis, petiolis 3-6 mm. longis angustissime alatis. Racemi terminales vel axillares 3-4 cm. longi hirsuti triquetri, pedicellis hirsutis 4 mm. longis, bracteis caducissimis ignotis. Calyx tubuloso-campanulatus, tubo (cum ovario connato)  $1\frac{1}{4}$  mm. longo 1 mm. lato, lobis 5 oblongo-triangularibus  $1\frac{1}{2}$  mm. longis 1 mm. latis apice obtusis utraque glabris. Petala 5 oblonga  $5\frac{1}{2}$  mm. longa  $2\frac{1}{2}$ -3 mm. lata apice obtusa vel rotundata basi haud vel vix contracta glabra basi se connata. Stamina  $\infty$ , filamentis filiformibus glabris, antheris reniformibus  $\frac{1}{2}$  mm. latis utraque emarginatis glabris. Stylus columnaris glaber 5 mm. longus rectus apice truncatus plus minus dilatus stigmatosus; discus annularis basi stylis insitus minute lobulatus.

HAB. Tōyencho: Daikwaikei, leg. T. SŌMA, Dec. 1915; Jokirin, leg. S. SASAKI, Mart. 1916.

Near *S. liukiuensis* MATSUM., but differs from it in having much thicker leaves with much elevated veins above.

**Symplocos sozanensis** HAYATA sp. nov. Frutex, rami et ramuli glabri graciles fuscentes. Folia alterna tenuiter coriacea oblongo-lanceolata vel lanceolata 4–5 cm. longa  $1\frac{1}{2}$ –2 cm. lata apice caudato-acuminata basi acuta margine minute remoteque serrulata vel subintegra utraque pagine glabra, costa supra impressa subtus elevata, venis venulisque reticulatis utraque pagine tenuissime elevatis, petiolis 6 mm. longis angustissime alatis glabris. Flores ignoti. Racemi fructiferi axillares  $1\frac{1}{2}$  cm. longi solitarii, fructibus ovoido-urceolatis 7 mm. longis glabris 5 mm. latis.

HAB. Sōzan, leg. Y. SHIMADA, Juli. 1918.

Near *S. okinarensis* MATSUM., but differs from it in having leaves with costas impressed above. In *S. okinarensis*, the costas of the leaves are elevated above.

## Oleaceæ.

### *Jasminum* LINN.

**Jasminum Shimadai** HAYATA sp. nov. (Pl. V. et Fig. 26). Frutex scandentissimus. Ramuli graciles glabri, medulla cava. Folia opposita vel subalterna tenuiter coriacea glabra cruciforme 3-foliolata, foliolis oblongis vel ovato-oblongis 8–9 cm. longis 5–6 cm. latis apiee rotundatis versus summum cuspidatis basi rotundatis margine integris, costa supra impressa subtus elevata, venis gracillimis utraque pagine obscuris tenuissime elevatis, supra nitidis subtus pallidissimis, petiolulo terminali longiore 3–4 cm. longo, petiolulis lateralibus brevioribus 2–3 cm. longis gracilibus glabris, petiolis communibus 3 cm. longis glabris. Panicleae corymbosse terminales 10–15 cm. longæ 10

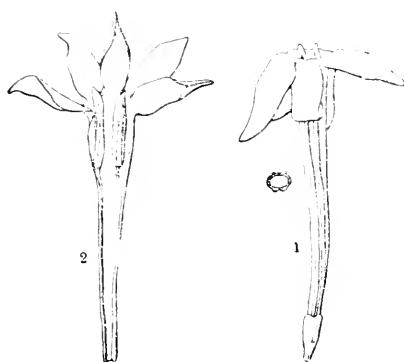


Fig. 26; *Jasminum Shimadai* HAYATA; 1, a flower; 2, corolla of the same flower, expanded.

em. latæ, ramis oppositis divaricatis, bracteis subulatis basi dilatis 4–5 mm. longis, bracteis superioribus minutis triangularibus 1 mm. longis plus minus hirsutis. Calyx subsessilis cylindricus 2–2½ mm. longus 2 mm. latus glaber vel tenuissime hirtellus apice ore truncatus haud lobatus. Corolla glabra hypocarteriformis, tubo gracili 2–2½ cm. longo 1½ mm. lato, limbo 4–5-partito, partibus lanceolatis 1 em. longis 4 mm. latis apice acuminatis basi vix vel haud contractis integris apice plus minus convolutis. Stamina 2 tubo corollæ affixa inclusa, filamentorum partibus liberis brevioribus 2–3 mm. longis glabris, antheris linearibus 5 mm. longis 1 mm. latis apice acuminatis basi truncatis, loculis 2 latere dehiscentibus. Ovarium breve cylindricum 1 mm. longum glabrum apice truncatum impressum, stylo erecto recto glabro filiformi 3–4 mm. longo incluso apice 2-lobato. Fructus (inmaturo) 2-loculares, loculis globosis valde divaricatis 3–4 mm. in diametro, connectivo inter loculos latiusculo.

HAB. Gaogan, leg. S. SHIMADA, Juli. 1918.

Somewhat resembles *Jasminum paniculatum* ROXB.; but differs from it by the much larger rounded leaflets.

### *Osmanthus* LOUR.

**Osmanthus bibracteatus** HAYATA sp. nov. (Fig. 27). Frutex; ramuli validisculi glabri cinerascentes angulati, cortice fisso plus minus soluto. Folia opposita crasse coriacea oblongo-lanceolata 7–8 cm. longa 2½–3 cm. lata apice acuminata basi obtusa margine integerrima utraque pagine glaberrima, costa supra minus subtus plus elevata, venis gracillimis subtus tenuiter elevatis petiolis 1 cm. longis. Fasciculi flororum 4–7-florati axillares solitarii basi 2-bracteati, bracteis oppositis se connatis triangularibus 4 mm. longis totiusque latis extus hirsutis intus glabris apice acutis, pedicellis glabris 1½ cm. longis gracilibus. Calyx glaber late campanulatus 1½ mm. longus 2½ mm. latus 4-lobatus, lobis semi-rotundatis 1 mm. longis 1½ mm. latis apice truncato-rotundatis basi haud contractis margine minnre erosionis vel integris. Corolla late campanulata glabra 4–5 mm. longa 5–6 mm. lata 4-lobata, lobis rotundato-oblongis 4 mm. longis 3 mm. latis apice obtusis basi plus minus contractis glabris. Stamina 2, filamentis 1 mm. longis glabris, antheris ovato-oblongis

$2\frac{1}{2}$  mm. longis  $1\frac{1}{2}$  mm. latis apice breve apiculatis basi leviter cordatis glabris. Ovarium glabrum globosum 1 mm. latum minus longum, stylo columniformi  $1\frac{1}{2}$  mm. longo, stigmate clavato-globoso medio tenuiter sulcato.

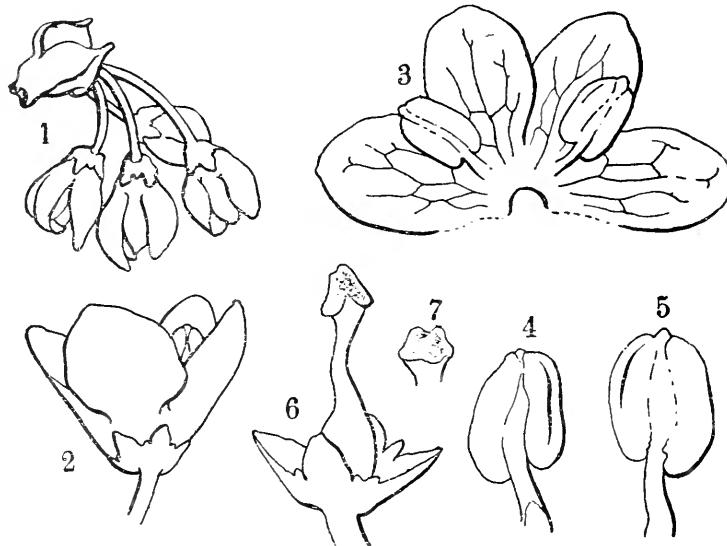


Fig. 27; *Osmanthus bipinnata* HAYATA; 1, a flower-cluster; 2, a flower; 3, corolla; 4, 5, a stamen, seen from different sides; 6, an ovary; 7, a stigma.

HAB. Mt. Daibu, leg. Y. MATSUDA, Nov. 1918.

Near *Osmanthus integrifolius* HAY., but differs from it in the much longer leaves and in the large bivalvate bracts at the base of the flower-clusters.

**Osmanthus daibuensis** HAYATA sp. nov. (Fig. 28). Frutex; ramuli gracillimi recti cinerei longitudinaliter rugosi lenticellis minutis elevatis cespitosi. Folia lanceolata opposita tenuiter coriacea 8–10 cm. longa  $1\frac{1}{2}$ –2 cm. lata apice caudato-acuminatissima basi cuneata margine integra plus minus undulata, costa supra plana vel impressa subtus elevata, venis supra planis subtus elevatis gracillimis. Flores ad axillas foliorum fasciculati, fasciculis 5–6-floratis basi bracteatis, bracteis triangularibus basi se connatis fasciculum amplectantibus, pedicellis 1 cm: longis glabris. Calyx tetragono-obpyramidalis 1 mm. longus totiusque latus 4-lobatus, lobis late rotundatis  $\frac{2}{3}$  mm. latis  $\frac{1}{2}$  mm. longis apice rotundatis. Corolla obconico-campanulata 3 mm. longa totiusque lata 4-lobata, lobis late oblongis 2 mm. longis totiusque latis apice



Fig. 28; *Osmanthus daibensis* HAYATA; 1, a branch; 2, a leaf; 3, a flower; 4, corolla, expanded; 5, 6, a stamen, seen from different sides; 7, rudimentary ovary in calyx.

rotundatis glabris basi haud contractis. Stamina 2 tubo corollæ affixa, filamentis glabris, antheris rotundato-oblongis  $1\frac{1}{2}$  mm. longis 1 mm. latis apice

apiculatis basi profunde cordatis glabris. Rudimentum ovarii minutum ovoidem  $1\frac{1}{2}$  mm. longum.

HAB. Mt. Daibu, leg. Y. MATSUDA, Nov. 1918.

Closely resembles *Osmanthus lanceolatus* HAY.; but distinguishable from it in the more acuminate leaves with lateral veins arranged in a much acuter angle.

***Osmanthus gamostromus*** HAYATA sp. nov. (Fig. 29). Frutex vel arborescens, ramulis cinerascentibus. Folia opposita oblongo- vel ovato-lanceolata 10 cm. longa 3- $3\frac{1}{2}$  cm. lata apice acuminatissima basi obtusa acuta vel

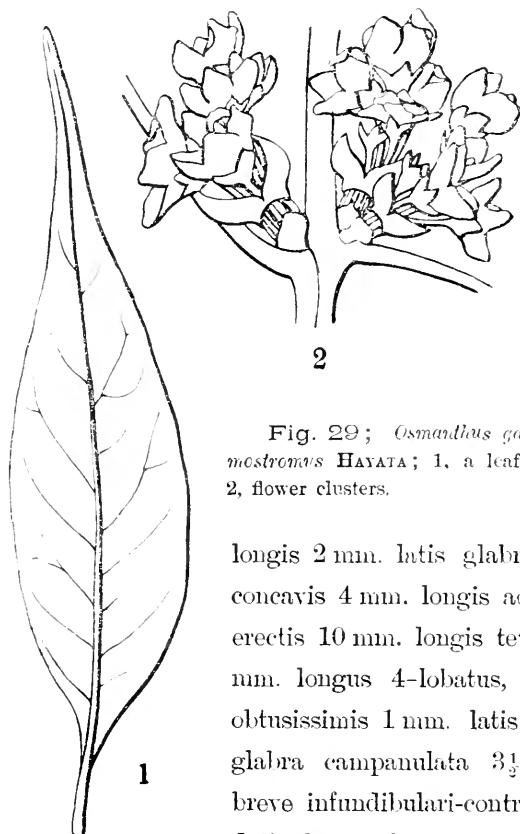


Fig. 29; *Osmanthus gamostromus* HAYATA; 1, a leaf; 2, flower clusters.

longis 2 mm. latis glabris, superioribus basi se connatis concavis 4 mm. longis acutis late ovatis, pedicellis glabris erectis 10 mm. longis tetragonis. Calyx campanulatus  $1\frac{1}{2}$  mm. longus 4-lobatus, lobis oblongo-rotundatis glabris obtusissimis 1 mm. latis totiusque longis integris. Corolla glabra campanulata  $3\frac{1}{2}$  mm. longa totiusque lata basi breve infundibulari-contracta medio 4-lobata, lobis rotundatis 2 mm. longis integris apice plus minus retusis vel rotundatis. Stamina 2, antheris oblongo-rotundatis breve apiculatis.

HAB. Arisan, leg. B. HAYATA, Jan. 1912.

Near *Osmanthus lanceolatus* HAY., but distinguishable from it in having

cuneata integra vel plus minus crispata vel plana glaberrima chartacea vel chartaceo-coriacea, costis supra impressis subtus elevatis, petiolis 1 cm. longis. Flores ad axillas foliorum umbellatim fasciculati, fasciculis 5-6-floratis ad axillas foliorum singulis vel geminatis basi bracteis 4 instructis, bracteis basi per paria se connatis, inferioribus brevissimis triangularibus latissimis 1 mm.

superioribus basi se connatis concavis 4 mm. longis acutis late ovatis, pedicellis glabris erectis 10 mm. longis tetragonis. Calyx campanulatus  $1\frac{1}{2}$  mm. longus 4-lobatus, lobis oblongo-rotundatis glabris obtusissimis 1 mm. latis totiusque longis integris. Corolla glabra campanulata  $3\frac{1}{2}$  mm. longa totiusque lata basi breve infundibulari-contracta medio 4-lobata, lobis rotundatis 2 mm. longis integris apice plus minus retusis vel rotundatis. Stamina 2, antheris oblongo-rotundatis breve apiculatis.

much broader leaves, in the much acuter sepals and especially in the bracteoles which are connate by pairs at the base.

**Osmanthus Matsudai** HAYATA sp. nov. (Fig. 30). Frutex; rami graciles glabri. Folia opposita coriacea lanceolata 7-8 cm. longa 2-2½ em. lata apice acuminata basi acuta ad petiolum abeuntia integerrima, costa supra impressa subtus elevata venis venulis obscuris, utraque pagine glaberrima, petiolis 1 cm. longis anguste alatis. Cymæ brevissimæ contractæ 1 cm. longæ axillares solitariae dense bracteatae, bracteis basis cymæ minoribus superioribus majoribus rotundato-ovatis glabris margine ciliolatis 4 mm. longis 2½ mm. latis apice acutis dorso plus minus carinatis, carinis supra apicem productis. Calyx glaber obconicus 1½ mm. longus 1⅔ mm. latus 4-lobatus, lobis rotundato-oblongis margine ciliolatis. Corolla tubuloso-campunulata 4 mm. longa 3 mm. lata 4-lobata, lobis rotundatis 1½ mm. longis margine ciliolatis glabris. Stamina 2 versus apicem tubi corollæ affixa, filamentis glabris 2 mm. longis, antheris rotundatis ⅓ mm. in diametro apice acutis basi 2-lobatis. Ovarium ovoideum glabrum ½ mm. longum apice stigmate sessili coronatum.

HAB. Mt. Buisan, leg. Y. MATSUDA, Juli. 1918.

Somewhat near *O. integrifolius* HAY., but differs from it in the much longer leaves and in the flower-clusters with almost erect pedicels.

### Loganiaceæ.

#### *Gardneria* WALL.

**Gardneria hongkongensis** HAYATA sp. nov. Frutex scandentissimus subvolubilis, ramis et ramulis vallido-viridibus glabris. Folia tenuiter coriacea lanceolata vel oblonga 8-9 cm. longa

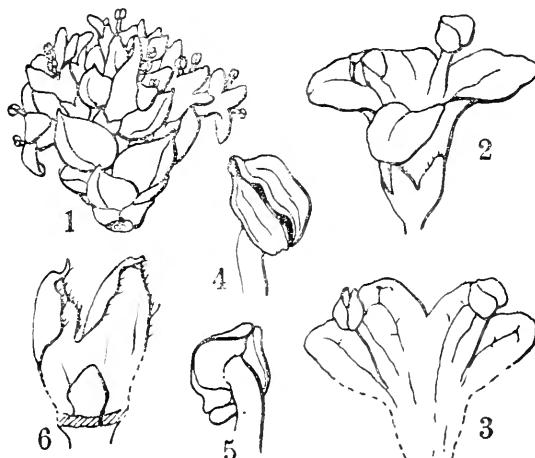


Fig. 30; *Osmanthus Matsudai* HAYATA;  
1, a flower-cluster; 2, a male flower; 3, corolla,  
expanded; 4, 5, a stamen, seen from different  
sides; 6, rudimentary ovary.

$2\frac{1}{2}$ -3 cm. lata apice acuta basi acuta obtusa vel rotundata vel cuneata margine integra in excisato supra nitida utraque glabra, c. stis venis ventralibusque supra plus minus elevatis subtus prominentے graciliterque evatis, petiolis 8 mm. longis glabris. Cymæ pauci florate axillares vel terminales 3-4 cm. longæ ternatim ramosæ, bracteis cuspidato-triangulâribus  $1\frac{1}{2}$  mm. longis, pedicellis ulimis glabris 1 cm. longis. Sepala 5 late rotundata 1 mm. longa  $1\frac{1}{2}$  mm. lata apice rotundata margine minute ciliolata. Corolla rotata, tubo subnullo, profunde 5-lobata, lobis linearibus 7 mm. longis  $1\frac{1}{2}$ -2 mm. latis apice acutis basi laud vel vix contractis conduplicato-valvatis vel valvatis facie interiore late sultatis glabris. Stamina 5 lobis corollæ alterna ad basin loborum affixa subsessilia ovato-oblonga 3 mm. longa 1 mm. lata aice apiculata basi 2-lobata, connecitivis crassi-simis. Ovarium ovoides-globosum 1 mm. longum glabrum apice ad stylum abeuns, stylis 5 mm. longo glabro.

HAB. Hongkong: Happy valley, leg. B. HAYATA, Juni. 1917.

Near *Gardneria multiflora* MAKINO; but differs from it in the leaves with very prominent veins and veinlets underneath, and in the glabrous connectives

As I was informed by Mr. DUNN, this interesting plant had first been discovered in Hongkong in 1916, a year before I collected the same species in the same island. It is very so close to the Japanese species *G. multiflora* that it was assumed to be identical with the latter. After coming back home, I have compared the plant with the type of *G. multiflora* and found that the Hongkong plant is a little different from the Japanese in the leaves which are very obtuse or round at the base, and have very prominent veins and veinlets underneath. In *G. multiflora*, the leaves are very cuneate at the base and have very slender scarcely prominent veins and veinlets underneath. The leaves of the new species are quite lustreless and iridescent dark green above, very pale beneath.

In referring this plant to *Gardneria*, I have followed REHDER (Pl. Wils. 1 - 564) and have retained the genus in the older and wider sense, as the character on which RADEBSKI relied to separate *Pseudogardneria* from *Gardneria* is not constant; for *G. lanceolata*, as pointed out by REHDER, has the flowers just intermediate between the two genera.

## Convolvulaceæ.

### *Erycibe* ROXB.

#### *Erycibe acutifolia* HAYATA sp. nov.

*Erycibe obtusifolia* HAYATA (non BENTH.) Ic. Pl. Formos. II. p. 122; Gen. Ind. p. 50.

The Formosan plant was formerly identified with the Hongkong plant; but the former is slightly different from the latter in having much acuter leaves.

## Scrophularineæ.

### *Ambulia* LAM.

*Ambulia stipitata* HAYATA sp. nov. Herba aquatica; caulis pauciramosus glaber. Folia opposita verticillata glabra superiora a basi multi-

Iaciniata in ambitu obovata 1-2 cm. longa 1 cm. lata, Iaciis linearibus vel filiformibus  $\frac{1}{2}$ - $\frac{3}{4}$  mm. latis 2-3-fidis vel lobatis, lobis linearibus apice acutis. Flores axillares solitarii, pedicellis  $2\frac{1}{2}$  mm. longis erectis rectis. Calyx cylindrico-campanulatus 4 mm. longus 2 mm. latus glaber 5-costatus, costis distinctis vel obscuris, apice 5-lobatus, lobis linearis-triangularibus  $1\frac{1}{2}$  mm. longis apice acutis. Corolla cylindrico-campanulata 10-12 mm. longa 7 mm. lata extus glabra, limbo 2-labiato, labio superiore majore late rotundato 4 mm. longo 5 mm. lato basi plus minus contracto, intus barbato, labio inferiore 8 mm. lato 3 mm. longo, lobo medio rotundato minore 3 mm. longo totiusque lato, lobis lateralibus latioribus 3 mm. longis 4 mm. latis late rotundatis apice truncato-rotundatis; corollæ tubus intus barbatus. Stamina 4 didynama inclusa, filamentis glabris, antleris disjunctis  $\omega$ -formibus 2-locularibus, loculis a se distinctis. Ovarium conico-ovatum  $1\frac{1}{2}$  mm. longum  $\frac{3}{4}$  mm. latum glabrum, stylo 6 mm. longo. Capsula oblongo-elliptica 4 mm. longa  $2\frac{1}{2}$  mm. lata plus minus complanata apice retusa medio sulcata 2-locularis loculicide dehiscens. Semina ellipsoidea  $\frac{1}{2}$  mm. longa, testa laevi nigricanti.

*Limnophila stipitata* HAYATA, in Herb. Taihoku.

HAB. Hōzan: Keishūshō, leg. Y. TASHIRO, Feb. 1914.

Near *L. sessiliflora*, but distinguishable from it in the stipitate capsules and nearly rounded seeds.

### *Lindernia* ALL.

***Lindernia stellarifolia*** HAYATA sp. nov. Herba diffusa; caulis a basi ramosissimus; ramis hirsutis acute tetragonis. Folia ovato-rhomboidea vel ovata sessilia opposita 1 cm. longa 7 mm. lata apice triangulari-acuta basi truncata lata margine integra chartacea vel membranacea utraque hirsuta. Flores axillares versus apicem cymosim dispositi, pedicellis 5 mm. longis, bracteis linearibus minutis. Calyx 5-partitus, partibus linearibus 3 mm. longis extus pance hirsutis margine minute serrulatis. Corolla cylindrico-campanulata 5 mm. longa, limbo 2-labiata, labio superiore erecto 2 mm. longo  $1\frac{1}{2}$  mm. lato oblongo apice retuso, labio inferiore  $2\frac{1}{2}$  mm. longo totiusque lato 3-lobato, lobo medio obovato-rotundato 2 mm. longo  $1\frac{1}{2}$  mm. lato apice rotundato, lobis lateralibus  $1\frac{1}{2}$  mm. longis totiusque latis. Stamina 4 didynama

ad faucem corollae affixa, filamentis anterioribus inflexis basi appendiculatis, antheris per paria confluentibus, loculis divaricatis basi acutis glabris. Discus antice semi-cupuliformis. Ovarium ovoidem 1 mm. longum glabrum, stylo 4 mm. longo apice plus minus dilatato 2-lobato. Capsula globosa 3 mm. longa glabra 2-valvata. Semina oblonga  $\frac{1}{3}$  mm. longa minute tuberculata.

*Vandellia stellariifolia* HAYATA.

HAB. Kuraru, Taihoku, Akō, Tamsui.

Near *Vandellia scabra* BENTH.; but distinguishable from it in the much smaller leaves.

**Lindernia cruciformis** HAYATA sp. nov. Herba diffusa 10 cm. longa a basi ramosa; caulis hirsutus. Folia opposita obovata vel obovato-spathulata vel ovata cum petiolis 4 cm. longa 2 cm. lata apice obtusissima basi subito cuneato-attenuata margine crenato-serrata, serris obtusissimis, membranacea utraque pagina paree hirsuta subsessilia. Cymæ terminales 1-2 em. longæ totiusque latæ paucifloræ vel axillares glabrae, pedicellis oppositis 5-8 mm. longis divaricatis glabris basi bracteis singulis instructis, bracteis triangularibus minutis  $\frac{1}{2}$  mm. longis. Calyx pruce hirsutus alte 5-partitus, partibus linearibus erectis rectis acuminatis 2- $2\frac{1}{2}$  mm. longis. Corolla late cylindrica 5- $5\frac{1}{2}$  mm. longa glabra, limbo 2-labiato, labio superiore breviore subrotundato  $1\frac{1}{2}$  mm. longo et lato erecto apice rotundato, labio inferiore longiore latiore 2 mm. longo 3 mm. lato 3-lobato, lobo medio rotundato 1 mm. longo et totiusque lato, lobis lateralibus conformibus rotundatis. Stamina 4 didynama ad faucem corollæ affixa, antheris per paria confluentibus 2-locularibus, loculis divaricatis oblongis  $\frac{1}{4}$  mm. longis, filamentis anterioribus basi appendiculatis glabris. Discus antice semi-cupuliformis. Ovarium glabrum conico-ovoidem 1 mm. longum, stylo 3 mm. longo glabro apice plus minus dilatato. Capsula oblongo-rotundata apice acuta 2- $2\frac{1}{2}$  mm. longa glabra 2-valvata. Semina numerosissima alba oblonga  $\frac{1}{4}$  mm. longa minutissime tuberculata.

*Vandellia cruciformis* HAYATA.

HAB. Kuraru, Akō.

Near *V. hirsuta* HAMILT.; but differs from it in the leaves with a cuneate base.

*Mimulus* LINN.

**Mimulus formosana** HAYATA sp. nov. Herba gracillima diffusa glabra; caulis circ. 10 cm. longus. Folia opposita glabra ovata vel oblonga membranacea 13 mm. longa 10 mm. lata apice obtusa vel acuta basi obtusa margine remote tenuiter serrata, petiolis 5–8 mm. longis. Flores terminales solitarii, pedunculis 5–8 mm. longis glabris. Calyx obconico-campanulatus 6–7 mm. longus glaber 5-carinatus ad carinas scaberrimus apice 5-dentatus, dentibus minutis 1 mm. longis a se 2 mm. remotis, partibus marginis inter dentes denticulatis. Corolla flava campanulata 11 mm. longa 5 mm. lata, limbo 5-lobato, lobis subæqualibus late rotundatis 2½ mm. longis 3½ mm. latis. Corolla latere inferiore prope faucem 2-striata secus strias glanduloso-hirsuta. Stamina 4 subæquilonga vel plus minus didynama, antheris reniformibus 2-locularibus, filamentis glabris. Ovarium fusiforme 3 mm. longum ¾ mm. latum, stylo columniformi 4 mm. longo apice dilato 2-labiato.

HAB. Taiheizan, leg. B. HAYATA, Mai. 1917.

Near *M. nepalensis* var. *japonica* MIQ.; but differs from it in having much smaller flowers with less hairy corolla.

*Siphonostegia* BENTH.

**Siphonostegia chinensis** BENTH.; FORBES et HEMSL. Ind. Fl. Sin. II. p. 202; MATSUMURA Ind. Pl. Jap. II.-2, p. 569.

HAB. Kagi.

The genus is new to the flora of Formosa.

*Bonnaya* LINK. et OTTO.

**Bonnaya aristato-serrata** HAYATA sp. nov. Annua; caulis a basi diffuse ramosus glaber. Folia opposita oblonga vel obovato-oblonga 2 cm. longa 6–8 mm. lata membranacea apice obtusissima basi obtusa vel truncata sessilia margine aristato-serrulata, serrulis acutissimis triangularibus ascendentibus ad apicem arista 1 mm. longa instructis, utraque glaberrima. Cymæ terminales paucifloratae, floribus oppositis, pedicellis 2 mm. longis, bracteis lanceolatis linearibus 3 mm. longis acuminatis. Calyx cylindrico-campanulatus 4 mm.

longus alte 5-lobatus, lobis erectis linearibus 3 mm. longis acuminatissimis margine minute ciliolatis. Corolla tubuloso-campanulata 6 mm. longa a medio sursum 2-labiata, labio superiore linearis 2 mm. longo  $\frac{2}{3}$  mm. lato apice obtuso erecto glabro, labio inferiore latissimo  $2\frac{1}{2}$  mm. longo patenti glabro  $2\frac{1}{2}$  mm. longo 3-lobato, lobis lateralibus oblongis, lobo medio oblongo  $1\frac{1}{2}$  mm. longo. Stamina perfecta 2 postica, loculis antheræ divaricatis, loculo superiore minore, inferiore majore; staminodia 2 antica fave corollæ affixa. Ovarium fusiforme  $1\frac{1}{2}$  mm. longum glabrum, stylo glabro  $3\frac{1}{2}$  mm. longo apice plus minus dilatato. Capsula cylindrica 1 cm. longa  $1\frac{1}{2}$  mm. lata 2-valvata.

*Ilysanthes aristato-serrata* HAYATA.

HAB. Kagi, leg. T. SÔMA, Sept. 1913.

Near *Bonnaya brachyata* LINK. et OTTO; but differs from it in the aristate serrature of the leaves and in the much smaller leaves and flowers.

### *Torenia* LINN.

***Torenia hokutensis*** HAYATA sp. nov. Herba a basi ramosissima, ramis diffusis tetragonis hirsutis. Folia opposita rotundato-rhomboides 2 cm. longa  $1\frac{1}{2}$  em. lata apice triangulari-acuta basi triangulari-cuneata margine serrata plus minus hirsuta sessilia vel brevissime petiolata. Flores axillares solitarii oppositi versus apicem caulis racemosim dispositi, tracheis minutis linearibus 4-5 mm. longis, pedicellis 5 mm. longis. Calyx cylindrico-campanulatus tenuiter hirsutus 5-partitus, partibus linearibus acuminatis dorso alatis, alis  $\frac{1}{4}$  mm. latis. Corolla cylindrico-campanulata 1 cm. longa glabra flava 2-labiata, labio superiore erexit emarginato; labio inferiore majore patenti 3-lobato. Stamina 4 perfecta, 2-postica inclusa, filamentis brevioribus 1 mm. longis glabris, 2-antica ad faucem affixa, filamentis longioribus exsertis 5 mm. longis, antheris per paria se confluentibus 2-locularibus, loculis divaricatis. Discus basi ovarii insitus brevissimus annuliformis plus minus lobulatus. Ovarium cylindricum 2 mm. longum glabrum acutum, stylo 7 mm. longo glabro apice plus minus dilatato. Capsula cylindrica apice obtusa 7 mm. longa 2 mm. lata glabra 2-valvata septicide dehiscens. Semina ellipsoidea  $\frac{1}{3}$  mm. longa minute reticulata ovoidea.

*Torenia Fordii* HAYATA Gen. Ind. Fl. Formos. p. 53, (non HOOK. f.).

HAB. Hokuto, Goshizan, Nantō.

Near *T. Fordii* Hook. f., but differs from it in the much elongated racemes.

**Torenia nantoensis** HAYATA sp. nov. Herba diffusa villosa-hirsuta, caulis 30–40 cm. longus ramosus hirsutus. Folia opposita triangulare-ovata vel ovato-oblonga 2 cm. longa 1½ cm. lata apice triangulari-acuta basi truncata margine serrata, serris triangularibus, utraque pagine villosa, petiolis 1 cm. longis hirsutis. Flores cymosi, cymis longe ramosis, ramis valde divaricatis, pedunculis ongins. Calyx hirsutus cylindricus plus minus recurvus 9 mm. longus 5-costulatus 2-labiatus, labiis acutis integris. Corolla cylindrico-campanulata 1½ cm. longa 2-labiata, labio superiore 5 mm. longo 4 mm. lato obovato apice emarginato, labio inferiore majore patenti 3-lobato, lobo medio obovato 6 mm. longo 5 mm. lato apice rotundato, lobis lateralibus minoribus 2½ mm. longis 3½ mm. latis; corolla intus prope basin hirsuta, lobis lateralibus intus latere exteriore plus minus hirsutis, cæterum glabra. Stamina 4 didynama, 2-postica inclusa, filamentis 1½ mm. longis, antheris 2-locularibus, loculis divaricatis alatis; 2-antica exserta, filamentis 7 mm. longis basi appendiculatis. Discus cupuliformis. Ovarium cylindricum 3 mm. longum 1 mm. latum, stylo 9–10 mm. longo glabro apice dilatato 2-lobato, lobis ovatis obtusis margine ciliolatis. Capsula cylindrica apice obtusa 9 mm. longa 2–3 mm. lata 2-valvata. Semina globosa ¼ mm. in diametro, leviter fuscentia.

HAB. Nantō, leg. Y. SHIMADA, Nov. 1917.

Near *Torenia hirtella* Hook. f.; but differs from it in the minutely villose leaves.

### *Veronica* LINN.

**Veronica polita** FR.; MATSUMURA Ind. Pl. Jap. II.-2, p. 572.

HAB. Shiringai, leg. T. SŌMA, Feb. 1915.

### Acanthaceæ.

#### *Hygrophila* R. Br.

**Hygrophila pogonocalyx** HAYATA sp. nov. Herba annua erecta; caulis tetragonus, internodiis subglabris, ad nodos densissime hirsutus. Folia

opposita chartacea linear-i-lanceolata 9 cm. longi 12 mm. lata apice obtusa basi late attenuata sessilia margine subintegra utraque pagine scaberrima breve hirsuta. Flores sessiles ad nodos glomeratim dispositi multi-bracteati, bracteis ovatis vel lanceolatis  $1\frac{1}{2}$  em. longis 4–6 mm. latis apice caudato-acuminatis extus strigosis intus glabris. Calyx subcylindricus  $1\frac{1}{2}$  cm. longus usque ad medium 5-fidus, lobis subaequalibus linearibus acuminatis. Corolla tubuloso-ampliata  $2\frac{1}{2}$  cm. longa 5 mm. lata, limbo 2-labiato, labio superiore erecto 1 cm. longo apice breviter 2-lobato, labio inferiore plus minus patenti apice 3-lobato, lobis aequiformibus, lobo medio oblongo 3 mm. longo 2 mm. lato apice obtuso; corolla intus barbata. Stamina 4 didynama, antheris oblongis 3 mm. longis  $1\frac{1}{2}$  mm. latis apice obtusissimis basi sagittatim 2-lobatis glabris. Stylus glaber. Discus pulviniformis. Ovarium conico-cylindricum  $2\frac{1}{2}$  mm. longum 1 mm. latum glabrum.

HAB. Toroku, leg. Y. SHIMADA, Juni. 1917.

Near *Hygrophila salicifolia* NEES., but differs from it in the much more barbate bracts, and in the very scabrous hirsute leaves.

### *Strobilanthes* BLUME.

**Strobilanthes lasiocalyx** HAYATA sp. nov. Herba basi suffrutescens glabra; caulis basi procumbens sursum ascendens, parte ascendentis 30–40 cm. longa subtetragona. Folia opposita oblongo-lanceolata cum petiolis 10 cm. longa  $2\frac{1}{2}$  cm. lata apice acuminatissima basi attenuata margine tenuiter serrulata membranacea vel chartacea utraque glabra, petiolis  $\frac{1}{2}$  em. longis. Flores cymosi sessiles, cymis 2–3-floratis pedunculatis axillaribus vel terminalibus, bracteis caducissimis linear-i-ovatis  $1\frac{1}{2}$  em. longis 3–4 mm. latis apice caudato-acuminatis dorso 1-carinatis; (bracteolis nullis?). Calyx alte 5-partitus segmentis linearibus  $1\frac{1}{2}$  em. longis 1 mm. latis hirsutis. Corolla extus parce hirsuta tubuloso-campylata 3 cm. longa 1 em. lata, limbo 5-lobato, lobis late rotundatis 6 mm. latis 3–4 mm. longis fere conformibus apice emarginatis. Stamina 4 didynama, antheris late triangulari-cordatis 2-locularibus 1 mm. longis  $1\frac{1}{2}$  mm. latis apice late triangulari-obtusis. Stylus glaber. Ovarium ovoideo-cylindricum  $1\frac{1}{2}$  mm. longum apice hirsutum.

HAB. Shinten, leg. U. FAURIE, Januario 1914.

Near *Strobilanthes formosanus* MOORE; but differs from it in having glabrous leaves and in the lanceolate acuminate bracts. The leaves of *S. formosanus* are hirsute, and the bracts of the same species are ovate and nearly obtuse.

**Strobilanthes longespicatus** HAYATA sp. nov. Caulis erectus 4 ped. altus ramosus, ramis subtetragonis glabris. Folia oblonga vel oblongo-lanceolata 13 cm. longa 4½ cm. lata apice acuta basi cuneato-attenuata margine obscure remoteque serrulata chartacea utraque glabra, venis venulisque utraque paginae elevatis, petiolis 2–3 cm. longis. Flores quasi-spicati, spicis axillaribus vel terminalibus 10–15 cm. longis; flores ad nodos spicæ oppositi sessiles bracteis singulis bracteolis dualibus instructi; bracteis linear-lanceolatis 1½ em. longis 5 mm. latis apice attenuatis ad summum obtusis basi truncatis haud contractis chartaceis concavis ad rhachin adpressis glabris; bracteolis linear-lanceolatis minoribus 2½ mm. longis 1½ mm. latis apice acuminatis basi obtusis glabris margine hirsutis intus glabris erectis ad calycem adpressis. Calyx erectus (tubus brevissimus 2 mm. longus) fere 5-partitus, segmentis erectis linearibus æqualibus 13 mm. longis 2–3 mm. latis apice acuminatis margine hirsutis intus extusque glabris dorso 1-costatis, costis plus minus carinatis. Corolla cylindrica 5 em. longa fauce 1½ em. lata basi subito contracta ad tubum 1 cm. longum 3 mm. latum abeuns extus glabra recta haud vel vix recurva; limbus subpatens 5-lobatus, lobis subæqualibus triangulari-rotundatis 8 mm. longis totiusque latis apice obtusis retusis. Corolla extus glabra intus deorsum tenuissime barbata. Stamina didynama, filamentis eum tubo corollæ alte connatis hirsutis, partibus liberis 2–10 mm. longis, posterioribus brevioribus 2 mm. longis, anterioribus longioribus 10 mm. longis, antheris 2-locularibus oblongis apice truncatis basi alte 2-lobatis, lobis obtusis glabris, loculis parallelis. Stylus filiformis 3 em. longus hirsutus apice plus minus incrassatus recurvus, lobo postico obsoleto. Ovarium cylindrico-oblongum apice paucem hirsutum. Capsula linearis glabra 17 mm. longa 4 mm. lata. Semina 4 oblongo-rotundata 3 mm. longa valde complanata hirsuta, retinaculis acutis.

HAB. Taitō : Harōye, leg. KOBAYASHI, Oct. 1907, No. 6011.

Remarkable for the very long erect spikes with acuminate persistent bracts.

**Strobilanthes prionophyllum** HAYATA sp. nov. Herba, ramis rectis subtetragonis glabris. Folia ovato-oblonga 5–6 cm. longa 2½–3 cm. lata apice longe acuminata basi subito acuta ad extremitatem longe attenuata ad petiolum abeuntia margine serrata, serris ascendentibus valde recurvis, membranacea utraque pagine subglabra, petiolis 4 cm. longis; folia variabilissima superiora multo minora. Flores terminales vel axillares solitarii vel geminati, bracteis singulis bracteolis duabus instructi, bracteis minutis linearibus 3 mm. longis 1 mm. latis concavis glabris; bracteolis linearibus apice obtusis glabris 6 mm. longis 1 mm. latibus. Calyx glaber rectus alte 2-labiatus, labio posteriore 3-fido, labio anteriore 2-fido, lobis vel segmentis 7–10 mm. longis linearibus 1 mm. latis dorso 1-costatis glabris. Corolla tubulosocampanulata 3 cm. longa fance 1½ cm. lata extus glabra; limbus 5-lobatus, lobis subaequalibus late-rotundatis 7 mm. latis 5 mm. longis; corolla extus glabra intus subglabra. Stamina didynama, antheris oblongo-linearibus 3 mm. longis 1 mm. latis apice obtusissimis basi 2-lobatis, lobis obtusis glabris, filamentis plus minus hirsutis. Stylus recurvus glaber. Discus cylindricus 1 mm. longus infra ovarium insidens. Ovarium ellipsoideum 2 mm. longum glabrum 1 mm. latum.

HAB. Taitō: Inikufukusha, leg. U. MORI, Dec. 1899, No. 2150.

Near *S. flexicaulis* HAY.; but distinguishable from it in the very sharply-serrate leaves.

**Strobilanthes rankanensis** HAYATA sp. nov. Caulis tenuissimus basi procumbens ad nodos radices emittens, partibus ascendentibus 15 cm. longis gracillimus. Folia opposita ovato-rhomboidea 1½ cm. longa 8 mm. lata apice trianguli-acuta vel obtusa basi subito acuta margine paucem obscureque seriata utraque pagine subglabra vel paucissime hirsuta herbacea, petiolis 5 mm. longis hirsutis. Flores axillares solitarii vel quasi-terminales subsessiles, bracteis nullis, bracteolis duabus instructi; bracteolis linearibus 5 mm. longis ⅓ mm. latis obtusis plus minus hirsutis. Calyx 2-partitus 7–8 mm. longus, parte superiore 3-fida, parte inferiore 2-fida; lobis linearibus glabris vel paucem hirsutis margine ciliolatis. Corolla sursum campanulata basi tubulosa 2½ cm. longa 1½ cm. lata extus glabra, limbo 5-lobato, lobis subaequalibus trianguli-rotundatis glabris. Stamina 4 didynama, antheris oblongo-linearibus. Discus columniformis 1 mm. longus ½ mm. latius infra ovarium insitus. Ovarium

cylindrico-ellipsoideum glabrum  $1\frac{1}{3}$  mm. longum  $\frac{1}{3}$  mm. latum; stylus filiformis 2 cm. longus glaber. Capsula 2-valvata 12 mm. longa 4-sperma, retinaculis acutis; semina oblonga  $2\frac{2}{3}$  mm. longa  $1\frac{3}{4}$  mm. lata adpresso-hirsuta valde complanata.

HAB. Rankzan, at 4,600 p.d. alt., leg. B. HAYATA, Mai. 1916.

Near *S. flexicaulis* HAY.; but differs from it in the very much smaller leaves.

***Strobilanthes Tashirci*** HAYATA sp. nov. Herba; caulis basi reponens ad nodos radicans sursum ascendens, parte ascendentis 25-30 cm. lata, tetragonus subglaber. Folia opposita oblongo-lanceolata vel lanceolata 8-9 cm. longa 3 cm. lata apice acuminata basi subito vel gradatim ad petiolum abeuntia margine obscure et tenuiter serrulata vel subintegra utraque pagine subglabra subitus ad venas tenuiter hirsuta membranacea. Flores racemosi, racemis paucifloratis terminalibus, pedicellis 1-2 mm. longis, bracteis singulis bracteolis duabus instructi, bracteis linearispathulatis 13 mm. longis; bracteolis linearibus calycem in longitudine aequantibus 1 cm. longis  $1\frac{1}{2}$  mm. latis obtusis hirsutis. Calyx 2-partitus, parte superiore 3-fida, parte inferiore 2-fida, segmentis 13 mm. longis pauce hirsutis. Corolla campanulata 2 cm. longa, limbo 5-lolato. Stamina didynama, filamentis hirsutis. Stylo glabro. Discus 1 mm. longus infra ovarium insitus; ovarium oboviedo-cylindricum glabrum  $2\frac{1}{2}$  mm. longum. Capsula 13 mm. longa glabra 4-sperma, retinaculis linearibus 3 mm. longis acuminatis; semina valle complanata  $2\frac{1}{2}$  mm. longa brevissime hirsuta  $1\frac{2}{3}$  mm. lata.

HAB. Loo-choo: Okinawajima, leg. Y. TASHIRO, Mart. 1887.

Somewhat resembles *S. formosanus* MOORE; but differs from it in the total absence of the bracts in the much narrower linear calyx-lobes and in the much thinner smaller leaves.

### *Rungia* NEES.

***Rungia chinensis*** BENTH. Fl. Hongk. p. 266; DUNN et TUTCHER Fl. Hongk. et Kwangt. p. 200.

HAB. Raisha, leg. U. FAURIE, Mart. 1914, No. 725.

New to the flora of Formosa.

### *Dicliptera* Juss.

***Dicliptera uraiensis*** HAYATA sp. nov. Herba basi suffrutescens; caulis ramosissimus, rami gracilibus tenuiter hirsutis. Folia opposita membranacea lanceolata 7 cm. longa  $1\frac{1}{2}$  cm. lata apice acuminata ad summum obtusa basi obtusa margine obscure crenata vel undulata utraque pagine tenuiter hirsuta, petiolis  $\frac{1}{2}$  cm. longis. Flores quasi-cynosci, cymis terminalibus; bracteae oppositae lanceolatae apice obtusae basi rotundatae 10-12 mm. longae 4 mm. latae intus glabrae extus hirsutae margine ciliolatae flores sessiles 2-4 incurrentes;

bracteolis triangulari-lanceolatis 2 mm. longis margine ciliolatis. Calyx cylindricus 4 mm. longus paucæ ciliolatus alte 5-fidus, lobis linearibus ciliolatis acuminateis. Corollæ tubus  $1\frac{1}{2}$  cm. longus 1 mm. latus extus glaber; limbo extus hirsuto 2-labiato, labiis æquiformibus extus hirsutis intus glabris margine ciliolatis obovatis vel oblongis 8 mm. longis 3–5 mm. latis apice rotundatis obscure brevissime 2–3-lobatis. Stamina 2 labio breviora, filamentis retrorse hirsutis, antheris 2-locularibus discretis, loculo altero superiore, altero inferiore affixo, lineari  $1\frac{1}{2}$  mm. longo glabro. Stylus filiformis apice 2-lobatus. Ovarium cylindricum  $1\frac{1}{2}$  mm. longum glabrum.

HAB. Uraisha, leg. S. SASAKI.

Near *D. japonica*; but differs from it in the much narrower leaves and in the lanceolate bracts.

### Labiatæ.

#### *Ocimum* LINN.

**Ocimum Tashiroi** HAYATA Ic. Pl. Formos. VIII. p. 109. Caulis tetragonus erectus, ramulis gracilibus pubescentibus. Folia inferiora non vixia superiora ovata 3 cm. longa 2 cm. lata apice triangulari-acuminata basi subito triangulare acuta ad extremitatem ad petiolum attenuata margine praeter acumen acute serrata, serris triangularibus haud vel vix recurvis ultraque pagine subglabra membranacea, petiolis 2 cm. longis. Racemi terminales versus apicem ramorum paniculatum dispositi 5–6 cm. longi; floribus ad nodos racemi fasciculatim dispositis, fasciculis 3–4 floratis alternis 1-bracteatis, bracteis ovatis 1 mm. longis totiusque latis apice digitatim serratis hirsutis; pedicellis 1 mm. longis hirsutis. Calyx plus minus declinatus tubuloso-campanulatus  $1\frac{1}{2}$  mm. longus 1 mm. latus patento-hirsutus et dense glandulosopunctatus, lobo postico magno subrotundato apice acuto  $\frac{2}{3}$  mm. longo, lobis lateralibus linearibus circ. 1 mm. longis margine ciliatis, lobis anticis linearibus longissimis 1 mm. longis ciliolatis; calyx intus glaber. Corollæ tubus 2 mm. longus ealyce æquilongus glaber  $\frac{2}{3}$  mm. latus; limbus 2-labiatus, labio postico 3-lobato, lobo postico dorso hirsuto rotundato, lobis lateralibus conformibus, labio antico oblongo 1 mm. longo obtuso glabro. Stamina didynama filamentis longioribus  $\frac{2}{3}$  mm. longis, antheris confluentibus 1-locularibus.

Discus in glandulam 1 ovario breviorem tumens. Stylus  $\rho$ -formiter recurvus glaber apice 2-lobatus. Nuculae obovoidæ glabrae.

HAB. Holisha, leg. Y. TASHIRO, Mart. 1896 (No. 9, A.).

## Proteaceæ.

### *Helicia* LOUR.

***Helicia hainanensis*** HAYATA sp. nov. Arborescens; rami et ramuli glabri, lenticellis nullis. Folia alterna sed approximativitatem in quoque disposita chartacea vel tenuiter coriacea ovato-oblongolata vel oblongolata 12-17 cm. longa 5-7 cm. lata apice cuneato-acuta ad summum obtusa et ad centrum apiculata basi cuneato-attenuata ad extremitatem obtusissima, margine remotissime serrulata utraque pagine glabra, costis venis venulisque utraque pagine elevatis grosse reticulatis, sessilia. Racemi terminalis vel axillares simplices haud ramosi cum pedunculis 2 cm. longis 15-20 cm longi cum floribus 4 cm. latis glabri, pedicellis glabris 3 mm. longis divaricatissimis. Segmenta calycis 4 linearia spiraliter recurvata 1 $\frac{1}{2}$  cm. longa  $\frac{1}{2}$  mm. lata apice plus minus dilatata, partibus dilatatis 3 $\frac{1}{2}$  mm. longis 1 $\frac{1}{4}$  mm. latis apice acutis, glabra. Stamina 4 sessilia, antheris glabris linearis-oblongis 3 mm. longis  $\frac{2}{3}$  mm. latis apice crasse apiculatis basi obtusis; glandulae 5 cum segmentis calycis alterne rotundatae  $\frac{2}{3}$  longæ totiusque latae glabrae crassiusculæ. Ovarium oblongo-ovoidatum 1 mm. longum breve stipitatum apice attenuatum, stylo filiformi recto glabro apice elevato-incrassato stigmatoso.

HAB. Hainan, leg. S. KONISHI, Juli. 1909.

Near *Helicia robusta* WALL. (HOOK. f. Fl. Brit. Ind. V. p. 191); but differs from it in the smaller and thinner leaves.

## Elæagnaceæ.

### *Elæagnus* LINN.

***Elæagnus buisanensis*** HAYATA sp. nov. (Fig. 31-I.) Frutex. Rami et ramuli fusco-purpurascentes. Folia oblongo-ovata vel -ovata vel oblongolata tenuiter coriacea 5 cm. longa 18-20 mm. lata apice acuta vel subito acuminata basi acuta vel obtusa margine integra supra glabra subtus densiuscula lepidota, lepidibus  $\frac{1}{4}$  mm. in diametro fusco-rubescens. Fl. ♂: ignoti. Fl. ♀: Ovarium cum calycis tubo lineari-ellipsoideum 6 mm. longum 2 $\frac{1}{2}$  mm. latum dense lepidotum; limbo oboconico-tubuloso 9 mm. longo 5 mm. lato apice 4-lobato, lobis triangularibus 2 $\frac{1}{2}$  mm. longis totiusque latis apice acutis extus dense lepidotis intus hirsutis. Stamina 4, antheris sessilibus.

HAB. Buisan, leg. S. SASAKI, Mart. 1910.

Near *E. galra* THUNB., but differs from it in the much smaller oblong leaves.

**Elæagnus convexolepidota** HAYATA sp. nov. (Fig. 31-II.) Frutex, rami et ramuli fulvo-cinerascentes. Folia ad ramulos brevissimos hornotimos dense disposita decidua chartacea obovata vel oblonga 2-3 cm. longa 12-15 mm. lata apice acuta vel rotundata basi acuta vel obtusa margine integra supra fusco-nigricantia paucæ stellato-hirsuta subtus densissime argenteo-lepidota, petiolis 3-4 mm. longis. Flores ad axillas foliorum hornotiorum 2-3-globerati, pedicellis 3-4 mm. longis. Calycis tubus supra constrictioem obconico-campanulatus 4-5 mm. longus 2-3 mm. latus, limbo 4-lobato, lobis triangularibus 2 $\frac{1}{2}$  mm. longis totiusque latis apice acutis.

HAB. Musha: Oiwake, ad 7,500 ped. alt., leg. B. HAYATA, Aprili. 1916.

Near *E. Oldhami*, but differs from it in the convex scales on the under surface of the leaves.

**Elæagnus daibuensis** HAYATA sp. nov. (Fig. 31-V.) Frutex. Folia oblonga vel oblongo-ovata coriacea 8 cm. longa 3 $\frac{1}{2}$  cm. lata apice acuta vel acuminata basi obtusa vel rotundata margine integra supra paucæ subtus dense lepidota, petiolis 1-1 $\frac{1}{2}$  cm. longis. Flores quasi-umbellati, umbellis 3-4-floratis, pedicellis 1-2 mm. longis. Calyx supra constrictioem 7 mm. longus, tubo 3-4 mm. longo 2 $\frac{1}{2}$  mm. lato, limbo 4-lobato, lobis triangularibus 2 mm. longis totiusque latis apice acutis.

HAB. Daibusan, leg. S. NAKAI, Dec. 1912.

Near *Elæagnus rotundata*, but distinguishable from it in the much more appressed scales on the under surface of the leaves.

**Elæagnus erosifolia** HAYATA sp. nov. (Fig. 31-IV.) Frutes, rami et ramuli dense lepidoti fuscentes. Folia oblongo-lanceolata vel lanceolata 7 cm. longa 2 $\frac{1}{2}$  cm. lata apice triangulari-acuta basi obtusa margine erosa tenuiter coriacea supra glabra subtus densissime lepidota, lepidibus fulvo-rubescensibus, venis lateralibus supra haud elevatis subtus leviter elevatis gracillimis, petiolis 1 cm. longis. Flores quasi-umbellati, umbellis axillaribus 8-10-floratis, pedicellis 3 mm. longis gracilibus. Calycis supra constrictioem limbus 8-9 mm. longus apice 4-lobatus, lobis oblongo-triangularibus 3 $\frac{1}{2}$  mm. longis 2 $\frac{1}{2}$  mm. latis apice acutis intus hirsutis. Stamina 4.

HAB. Shatōzan, Ōkaseki.

Near *Elæagnus glabra* THUNB.; but differs from it in the leaves which

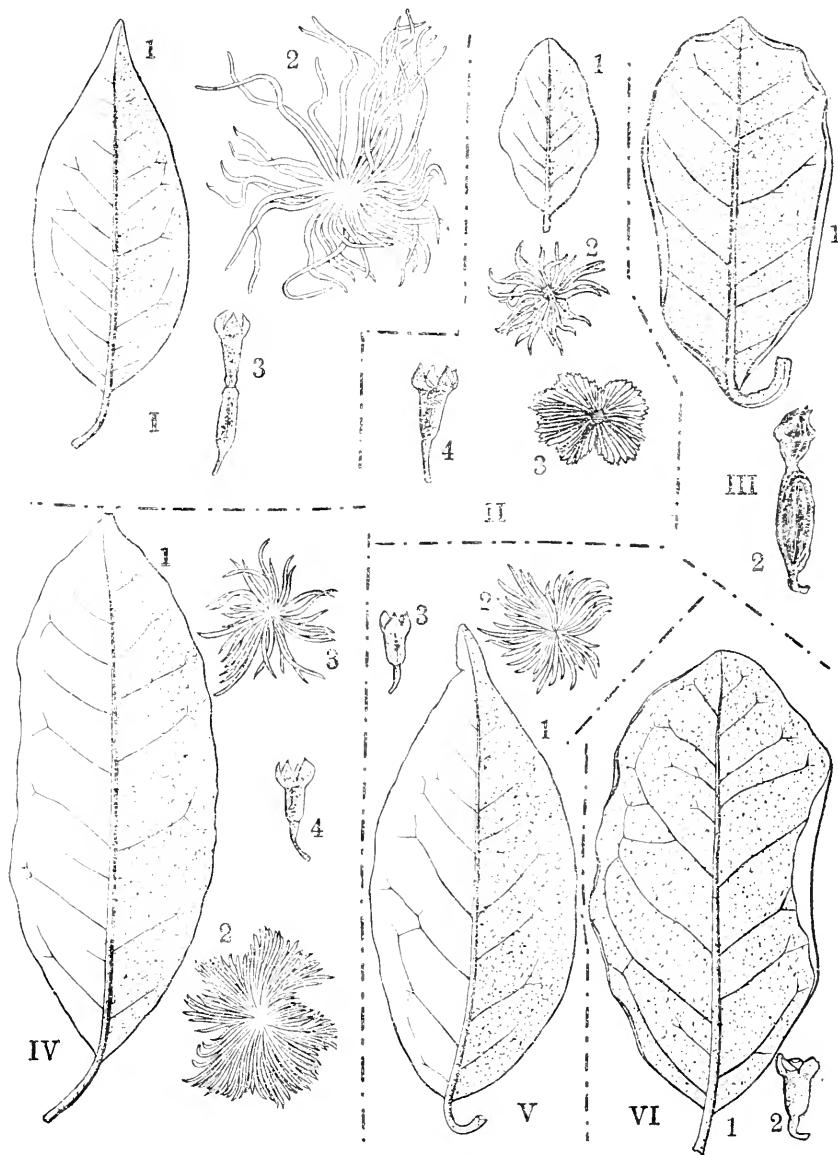


Fig. 31; I., *Elaeagnus buisanensis* HAYATA; 1, a leaf; 2, a hair on the under surface of a leaf; 3, a flower. II., *Elaeagnus convexolepidota* HAYATA; 1, a leaf; 2, a hair on the upper surface of a leaf; 3, a hair on the lower surface of a leaf; 4, a flower. III., *Elaeagnus kotoensis* HAYATA; 1, a leaf; 2, a flower. IV., *Elaeagnus erosifolia* HAYATA; 1, a leaf; 2, a colored hair on the under surface of a leaf; 3, a colorless hair on the same leaf; 4, a flower. V., *Elaeagnus daibruensis* HAYATA; 1, a leaf; 2, a hair on the under surface of a leaf; 3, a flower. VI., *Elaeagnus formosana* NAKAI; 1, a leaf; 2, a flower.

are crenate on the margin.

**Elæagnus grandifolia** HAYATA sp. nov. Frutex scandentissimus, ramuli fulvo-cinerascentes. Folia magna tenuiter coriacea ovato-oblonga vel oblongo-lanceolata 18 cm. longa  $7\frac{1}{2}$  cm. lata apice subito acuta vel acuminata basi obtusa rotundata vel tenuiter cordata margine subintegra, petiolis 5–10 mm. longis. Calycis tubus supra constrictionem 9 mm. longus extus dense lepidotus apice 4-lobatus, lobis oblongo-triangularibus 3 mm. longis acutis.

HAB. Taiheizan : Kamiyodani, Mai. 1917, leg. B. HAYATA.

Remarkable for its very large leaves.

**Elæagnus kotoensis** HAYATA (Fig. 31-III.) Frutex ; rami validiusculi. Folia alterna coriacea obovato-oblonga vel oblonga  $5\frac{1}{2}$ – $6\frac{1}{2}$  cm. longa  $2\frac{1}{2}$ – $3\frac{1}{2}$  cm. lata apice obtusissima basi obtusa margine integerrima deorsum recurva supra glabra minute remoteque punctata subtus densissime lepidota, petiolis  $1\frac{1}{2}$  cm. longis. Fl. ♂: ignoti. Fl. ♀: calycis tubus apice constrictus; limbus obconico-campanulatus 8 mm. longus utraque pagine dense depresso-hirsutus, pilis stellatis, medio sursum 4-lobatus, lobis  $3\frac{1}{2}$  mm. longis  $2\frac{1}{2}$  mm. latis apice acutis. Stamina 4 basi loborum cum lobis alternatim disposita subsessilia, antheris oblongo-linearibus  $1\frac{1}{2}$  mm. longis  $\frac{2}{3}$  mm. latis apice emarginatis; lobi calycis utraque pagine dense hirsuti; sed tubo limbi calycis extus hirsuto intus glabro.

HAB. Kōtōshō, leg. Y. KIKUCHI, Dec. 1909.

Near *E. pungens* BL.; but differs from it in the very much depressed scales on the under surface of the leaves.

**Elæagnus longidrupa** HAYATA sp. nov. (Fig. 32-I.) Frutex scandentissimus, ramis et ramulis longissimis rectis. Folia tenuiter coriacea vel chartacea linear-lanceolata vel lanceolata apice acuminata basi acuta vel cuneata margine subintegra supra glabra subtus densiuscule lepidota, petiolis 1 cm. longis. Calycis tubus supra constrictionem 4 mm. longus, limbo 4-lobato, lobis oblongo-triangularibus 4 mm. longis  $1\frac{1}{2}$ –2 mm. latis apice acutis. Drupa cylindrico-elliptica  $1\frac{1}{2}$  cm. longa 5 mm. lata lepidota.

HAB. Arisan : Funkiko et Heishana, leg. B. HAYATA, Mart. 1914.

Near *E. morrisonensis* HAY., but distinguishable from it in the much longer lanceolate leaves with always acute base.

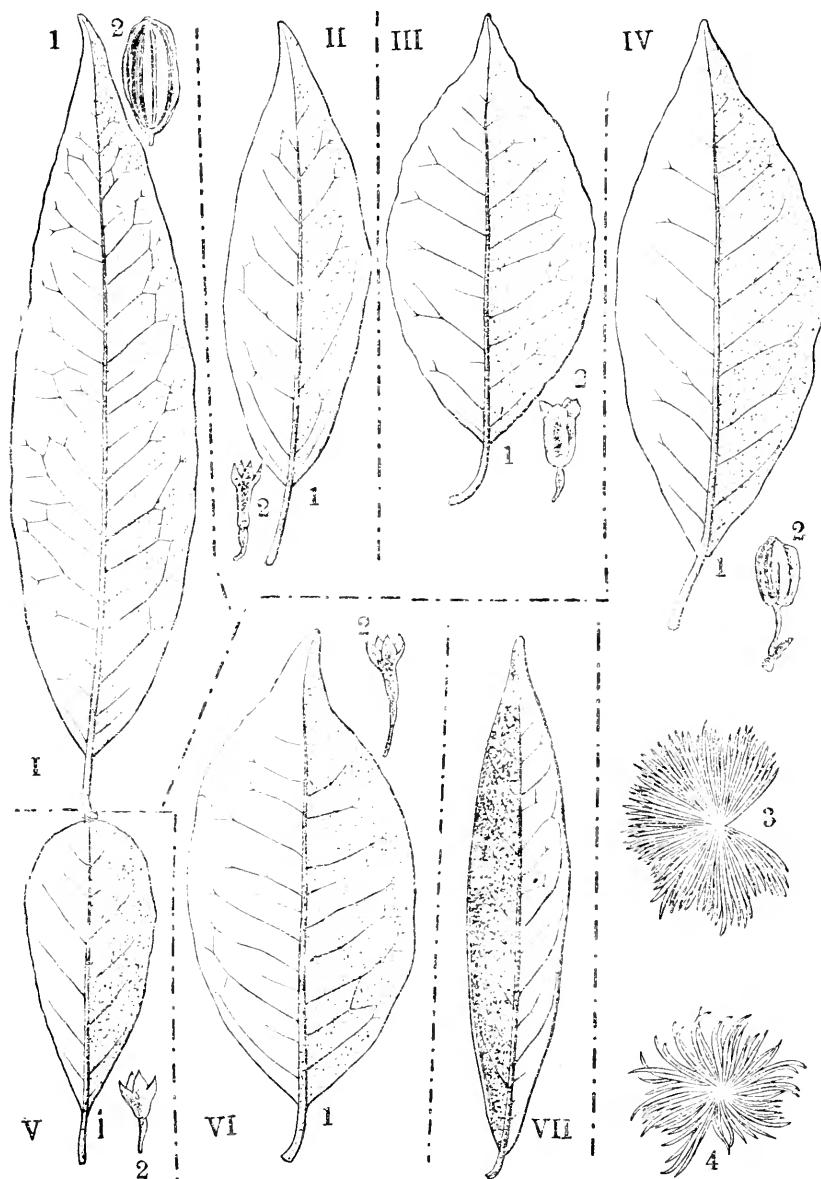


Fig. 32; I., *E. longidruja* HAY.; 1, a leaf; 2, a drupe. II., *E. norrisensis* HAY.; 1, a leaf; 2, a flower. III., *E. Thunbergii*; 1, a leaf; 2, a flower. IV., *E. oiwakensis* HAY.; 1, a leaf; 2, a drupe; 3, a colored hair on the under surface of a leaf; 4, a colorless hair on the same surface. V., *E. Oldhami* HEMSL.; 1, a leaf; 2, a flower. VI., *E. paucilepidota* HAY.; 1, a leaf; 2, a flower. VII., *E. nokoensis* HAY.

**Elæagnus nokoensis** HAYATA sp. nov. (Fig. 32-VII.) Frutex. Rami et ramuli densissime lepidoti. Folia oblanceolata vel linearis-oblanceolata 9 cm. longa 2 cm. lata apice subito acuminata basi obtusissima margine subintegra supra glabra, venis nervisque supra distincte elevatis subtus haud distinctis, pagine densissime lepidota, lepidibus albicanibus, petiolis 7 mm. longis. Fructus ellipsoideo-ovoidens 1 cm. longus, pedicellis 1 cm. longis.

HAB. Nōkōzan, leg. R. KANEHIRA et S. SASAKI, Mai. 1916, (No. 56).

Near *E. morrisonensis* HAY., but differs from it in the oblanceolate leaves with elevated veins on the upper surface.

**Elæagnus ciwakensis** HAYATA sp. nov. (Fig. 32-IV.) Frutex. Rami fuscentes minute hirsuti. Folia oblonga vel oblongo-lanceolata 7-8 cm. longa 3-3½ cm. lata apice acuminata vel acuta basi obtusa margine subintegra supra glabra subtus densissime lepidota, (folia hornotina subtus fulvo-rubescens); petiolis 1-1½ cm. longis. Flores quasi-umbellati, umbellis 3-4-floratis. Calyx supra constrictioem 8 mm. longus, tubo 5 mm. longo, limbo 4-lobato, lobis triangularibus 2½ mm. longis totiusque latis apice acutis extus lepidotis intus hirsutis.

HAB. Gōkwanzan: Oiwake, ad 7,000 ped. alt., leg. B. HAYATA, Aprili. 1916.

Near *E. morrisonensis* HAY., but differs from it in the brownish red scales on the under surface of the young leaves.

**Elæagnus paucilepidota** HAYATA sp. nov. (Fig. 32-VI.) Frutex. Rami glabri. Folia elliptica oblonga vel obovato-oblonga 7-9 cm. longa 4-5 cm. lata apice acuta basi obtusa margine subintegra tenuiter coriacea supra glabra subtus densiuscule lepidota, lepidibus rotundatis haud superpositis haud imbricatis dispositis, venis lateralibus gracillimis, petiolis 1-1½ cm. longis. Fl. quasi-umbellati, umbellis axillaribus 5-6-floratis, pedicellis 5 mm. longis. Calycis tubus cum parte ovarifera 6 mm. longus apice dilatitus 4-lobatus, lobis triangulari-oblongis 3 mm. longis 2½ mm. latis apice acutis extus dense lepidotis intus dense hirsutis. Stamina 4, antheris sessilibus.

HAB. Shintiku: Goshizan, leg. T. KAWAKAMI, Dec. 1905.

Near *E. glabra* THUNB.; but differs from it in the obovate or oblong leaves with a few scattered scales on the under surface.

## Euphorbiaceæ.

*Securinega* COMM.

**Securinega fluggeoides** MUELL. ARG.; HAYATA Gen. Ind. p. 68.

HAB. Kōtōshō; Taito.

*Agyneia* VENT.

**Agyneia bacciformis** A. JUSS.; HOOK. f. Fl. Brit. Ind. V. p. 285;  
WIGHT Ic. Pl. t. 1893.

*Phyllanthus bacciformis* LINN.; BENTH. Fl. Hongk. p. 310.

HAB. Anping, leg. T. SŌMA, Oct. 1914.

New to the flora of Formosa.

*Phyllanthus* LINN.

**Phyllanthus oligospermus** HAYATA sp. nov. Frutex. Rami gracieles, ramulis glabris gracillimis rubro-purpurascens tenui foliatis. Folia oblonga vel elliptica 2-3 cm. longa 10-13 mm. lata apice obtusissima ad centrum summi breve minuteque cuspidata basi cuneata tenuiter chartacea basi cuneata acuta margine integra utraque glabra subtus pallida plus minus glauca, petiolis 2 mm. longis. Flores monœcii 4-5 ad axillas foliorum congesti. Fl. ♂, pedicellis gracilibus 4 mm. longis stipitatis. Sepala 5-6 oblonga vel obovata exteriora concava interiora plana 2 mm. longa 1½ mm. lata apice obtusa vel rotundata glabra. Stamina 5-3 ad centrum floris congesta, filamentis liberis glabris 1½ mm. longis, antheris reniformibus apice basique marginatis. Rudimentum ovarii 0. Discus minutus lobatus vel ad nullum reductus. Fl. ♀: pedicelli validi 3 mm. longi glabri. Sepala 5-6 oblongo-lanceolata 2½ mm. longa 2 mm. lata apice subito cuspidata basi obtusa margine sursum integra vel erosa. Ovarium ovideum 1½ mm. longum 1¼ mm. latum glabrum apice ad stylum alveans; styli parte basilari haud fida ¾ mm. longa, parte superiore 3-fido, ramis patentissimis 2 mm. longis gracillimis recurvis. Bæcca globosa 8 mm. in diametro 4-sperma. Semina quadrangularia 3 mm. longa 2½ mm. lata.

HAB. Taikokan, leg. Y. SHIMADA; Sankakuyū, leg. T. SŌMA.

Near *P. reticulata*, but differs from it in the much larger flowers.

*Phyllanthus takaensis* HAYATA sp. nov. Frutex. Rami graciles, ramulis gracillimis toto foliiferis. Folia oblonga obovata oblongo-lanceolata  $1\frac{1}{2}$ -2 cm. longa 7-8 mm. lata apice obtusissima basi cuneata vel obtusa margine integra utraque glabra tenuiter chartacea subtus pallidissima, petiolis 1-2 mm. longis, stipulis triangulari-lanceolatis 1 mm. longis. Flores ad axillas foliorum 5-10-congesti, pedicellis gracillimis 8-10 mm. longis glabris. Fl. ♂: sepala 5 inaequalia, exteriora oblonga 2 mm. longa  $1\frac{1}{4}$  mm. lata apice rotundata basi hanc contracta concava glabra; stamina 5 fere connata. Fl. ♀ ignoti.

HAB. Takao: Ape's Hill, leg. B. HAYATA, Aprili. 1917.

Near *Phyllanthus reticulatus* POIR., but differs from it in the much smaller leaves.

#### *Glochidion* FORST.

*Glochidion Arnottianum* MUELL. ARG. in Linnaea XXXII. p. 60; FORBES et HEMSL. Ind. Fl. Sin. II. p. 424.

*Glochidion hirsutum* HAYATA Gen. Ind. Fl. Formos. p. 67. (non MUELL. ARG.)

HAB. Suisha, Taihoku.

NOTE: Fruits pale green or slightly purple; seeds scarlet, shining; male flowers pale-green.

*Glochidion chademenosocarpum* HAYATA sp. nov. Frutex; ramuli gracillimi glabri. Folia alterna subdistiche disposita chartacea oblonga vel obovata 5-8 cm. longa  $2\frac{1}{2}$ -4 cm. lata apice obtusissima basi oblique acuta margine integerrima utraque pagine glaberrima sessilia vel brevissime petiolata, petiolis 2-3 mm. longis, stipulis cuspidato-triangularibus  $2\frac{1}{2}$  mm. longis  $1\frac{1}{2}$  mm. latis glabris crassiæculis. Flores ♂ et ♀ intermixti ad axillas densissime glomeratim dispositi. Fl. ♂: pedicellis gracillimis 1 em. longis tenuiter hirsutis; sepala 6, exteriora majora obovata  $2\frac{1}{2}$  mm. longa  $1\frac{1}{2}$  mm. lata apice obtusissima basi cuneata glabra, interiora angustiora  $2\frac{1}{2}$  mm. longa 1 mm. lata; stamina 3 toto connata, appendicibus liberis, antheris linearibus. Fl. ♀ perfecte sessiles; sepala 6 subæqualia extus glabra intus tenuiter hirsuta basi erecta medio sursum extorse patentia ob lanceolata  $1\frac{1}{2}$  mm. longa  $\frac{1}{2}$  mm. lata apice obtusa

basi cuneata; ovarium depresso-globosum  $\frac{1}{2}$  mm. longum 1 mm. latum, stylo cum stigmate 1 mm. longo columniformi  $\frac{3}{5}$  mm. crasso apice circ. 8-sulcato.

HAB. Inter Ronō et Kōsenpo, leg. B. HAYATA, Oct. 1917.

Near *G. Fortunei*, but differs from it in the much densely clustered and perfectly sessile female flowers.

**Glochidion eriocarpum** CHAMP.; BENTH. Fl. Hongk. p. 314; FORBES et HEMSL. Ind. Fl. Sin. II p. 424.

HAB. Tuishū: Daitonpo; Giochi; Suiteiryō.

**Glochidion Fortunei** HANCE; HAYATA Gen. Ind. p. 66.

HAB. Ape's Hill, leg. B. HAYATA, Aprili. 1917.

NOTE: Flowers pale yellow; fruits violet-red; seeds orange-red.

**Glochidion hongkongense** MUELL. ARG.; HAYATA Gen. Ind. p. 67.

*Glochidion zeylanicum* HAYATA Gen. Ind. p. 67. (non A. Juss.)

HAB. Suisha, Kelung, Taitō, Liukiu.

NOTE: Male flowers pale yellow; fruits pale green; seeds scarlet-red, shining.

**Glochidion hypoleucum** HAYATA sp. nov. Frutex; rami et rami graciles recti plus minus hirsuti. Folia alterna subdistiche disposita oblonga vel elongato-elliptica  $4\frac{1}{2}$ - $6\frac{1}{2}$  cm. longa 2- $2\frac{1}{2}$  cm. lata apice obtusa basi obtusissima vel rotundata margine integra basi plus minus obliqua vel aequalia supra glabra subtus tenuissime hirsuta chartacea subtus pallidissima, petiolis 3 mm. longis. Flores ad axillas glomeratim siti, fl. ♂ et ♀ intermixti. Fl. ♂ pedicellati, pedicellis gracillimis 6 mm. longis tenuiter hirsutis; sepala 6, exteriora majora oblonga 3 mm. longa 2 mm. lata apice obtusissima crassiuscula glabra, interiora minora  $2\frac{1}{2}$  mm. longa  $1\frac{1}{2}$  mm. lata; stamina 3 tota connata sessilia, appendicibus liberis acutis, cum appendicibus  $1\frac{1}{2}$  mm. longa, antheris 1 mm. longis elongato-ovatis. Fl. ♀: sessiles vel breve pedicellati, pedicellis 1-2 mm. longis erectis hirsutis; sepala 6 vel 3, inaequalia hirsuta, majora obovata 1 mm. longa; ovarium hirsutum cum stigmate obconico-cylindricum 2 mm. longum, stigmate validissimo incrassato  $1\frac{1}{2}$  mm. longo 1 mm. lato basi hirsuto sursum glabro apice 3-lobato.

*Glochidion bicolor* HAYATA Gen. Ind. Fl. Formos. 67. (non MUELL. ARG.)

HAB. Holisha: Giochi, leg. B. HAYATA, Aprili. 1916.

Near *G. sinicum* HOOK. et ARN., but differs from it in the much longer obconical stigmata.

**Glochidion kotoense** HAYATA sp. nov. Frutex; rami et ramuli graciles erecti recti glabri. Folia alterna tenuiter coriacea ovato-oblonga vel oblonga valde obliqua 10 cm. longa 3½-4 cm. lata apice acuminata vel cuspidato-acuminata ad summum obtusa et apiculata basi obliquissima, latere superiore acuta latere inferiore rotundata, margine integra utraque pagine glabra, petiolis 5 mm. longis glabris. Capsula depresso-globosa valde depressa 7 mm. in diametro 4 mm. longa glabra leviter lobata.

HAB. Kōtōshō.

Near *G. fagifolium*, but differs from it in the much more oblique and acuminate leaves.

**Glochidion kusukusense** HAYATA sp. nov. Frutex; ramuli graciles erecti recti glabri. Folia alterna chartacea lanceolata 4-6½ cm. longa 1½-2 cm. lata apice acuminata ad summum breve apiculata basi acuta plus minus obliqua margine integra utraque glabra, petiolis 5 mm. longis. Flores ♀ ad axillas foliorum glomeratim dispositi, pedicellis gracillimis 5 mm. longis glabris; sepala 6 inaequalia, exteriora majora oblonga 1½ mm. longa 1 mm. lata apice acuta glabra, interiora minora; stamina 3 toto connata apiculata ⅔ mm. longa.

HAB. Kusukusu, leg. B. HAYATA et S. SASAKI, Juli. 1912.

Near *Glochidion Wrightii* BENTH.; but differs from it in the not very oblique leaves and in the much longer pedicels of male flowers.

**Glochidion sphærostignum** HAYATA sp. nov. Frutex; rami et ramuli graciles plus minus hirsuti. Folia alterna subdistiche disposita ovata vel ovato-lanceolata chartaceo-coriacea plus minus obliqua 9-10 cm. longa 3-3½ cm. lata apice acuminata basi oblique acuta vel rotundata margine integra utraque pagine glabra, petiolis 5 mm. longis tenuiter alatis. Flores ♀ ad axillas glomeratim vel umbellatim dispositi, pedunculis umbellæ 4 mm. longis glabris, pedicellis florum 4 mm. longis rectis glabris; sepala 6 subglabra inaequalia, exteriora majora triangulare-rotundata 1 mm. longa totiusque lata apice acuta, interiora oblonga acuta 1 mm. longa ½ mm. lata. Ovarium globosum hirsutum 1½ mm. longum totiusque latum, stigmate sessili deperso

tenuiter 5–6-lobato brevissimo. Fructus depresso-globosus valde depresso-globosus 6–8 mm. latus 3–4 mm. longus subglaber.

HAB. Shintiku: Shinpo; Suisha; (typus!) Kaukaukei, Hokuto.

Near *Glochidion hongkongense*; but differs from it in the much acuminate leaves with acute base, and in the hirsute ovaries.

***Glochidion suishænse*** HAYATA sp. nov. Frutex; ramuli graciles glabri.

Folia alterna subdistiche disposita tenuiter coriacea  $4\frac{1}{2}$ – $8\frac{1}{2}$  cm. longa 3– $4\frac{1}{2}$  cm. lata ovata obovata vel oblonga apice obtusa vel acuta basi cuneata vel obtusa vel rotundata integra utraque pagine glabra, petiolis 3 mm. longis. Flores ad axillas glomeratim dispositi, fl. ♂ et ♀ intermixti. Fl. ♂: pedicellis glabris gracilibus; sepala 6 inaequalia obovato-cuneata, exteriora majora 3 mm. longa  $1\frac{1}{2}$  mm. lata apice obtusissima basi cuneata glabra, interiora minora  $2\frac{1}{2}$  mm. longa basi cuneata 1 mm. lata apice obtusissima; stamina 3 toto connata apice breve apiculata. Fl. ♀: breve pedicellati, pedicellis 1– $1\frac{1}{2}$  mm. longis glabris; sepala 6, exteriora majora oblonga 2 mm. longa  $1\frac{1}{2}$  mm. lata apice obtusa obscure denticulata vel integra glabra, interiora minora angustiora glabra 2 mm. longa  $\frac{2}{3}$  mm. lata margine minute ciliolata denticulata vel integra. Ovarium depresso-globosum glabrum 1 mm. latum  $\frac{2}{3}$  mm. longum, stylo obconico-cylindrico 2 mm. longo glabro apice clavato-truncato multi-lobulato. Fructus depresso-globosus  $1\frac{1}{2}$  em. in diametro 8 mm. latus profunde 6-sulcatus glaber. Semina rubra.

HAB. Suisha; Hakku, Hōgō.

Near *G. Fortunei* HANCE; but distinguishable from it in the much larger oblong leaves, and in the much larger capsules.

NOTE: Leaves fresh green shining above, costa and veins elevated above; male flower pale green-yellow; capsules greenish more or less purple, seeds red.

#### *Antidesma* LINN.

***Antidesma acutisepalum*** HAYATA sp. nov. Frutex; rami et ramuli graciles lenticellis minutis notati tenuiter hirsuti recti. Folia lanceolata 9 cm. longa 2 cm. lata apice acuminatissima basi obtusa margine integra utraque pagine glabra, sed subtus ad costas tenuissime hirsuta chartacea vel tenuiter

coriacea, petiolis 5 mm. longis tenuiter hirsutis, stipulis linear-lanceolatis hirsutis  $2\frac{1}{2}$  mm. longis  $\frac{1}{3}$  mm. latis acuminatis recurvis. Flores dioecii spicati; spicis breve hirsutis 2–3 cm. longis, floribus pedicellatis basi 1-bracteatis, bracteis lanceolatis acuminatis glabris 1 mm. longis. Sepala 4–5 lanceolato-ovata glabra. Stamina 4. Rudimentum ovarii minutum glabrum.

HAB. Giyochi, leg. B. HAYATA, Aprili. 1916.

Near *A. japonicum*; but distinguishable from it in the much acuter sepals and in the presence of rudimentary ovaries.

**Antidesma hiiranense** HAYATA sp. nov. Frutex; rami et ramuli graciles. Folia obovata vel oblongo-obovata 4–5 cm. longa 2 cm. lata apice plus minus cuspidata ad summum obtusa basi cuneata margine integra utraque glabra sed subitus ad costas plus minus hirsuta tenuiter coriacea, petiolis 3 mm. longis hirsutis, stipulis caducissimis ignotis. Flores dioecii; spicae fl. ♂ terminales vel rarius axillares plus minus ramosae vel simplices. Fl. ♂ pedicellati, pedicellis basi 1-bracteatis, bracteis ovatis 1 mm. longis laceratis vel 3-fidis margine subciliatis. Sepala 4. Stamina 4. Flores ♀ spicati, spicis terminalibus simplicibus, floribus ignotis.

HAB. Hiiranzan, leg. B. HAYATA et S. SASAKI, Juni. 1912.

Near *A. japonicum*, but differs from it in the much thicker leaves which are obovate, shortly caudate and obtuse at the apex.

**Antidesma rotundisepalum** HAYATA sp. nov. Frutex; rami et ramuli minute hirsuti validi plus minus cinerascentes lenticellis minutis notati. Folia oblonga vel ovato-oblonga  $6\frac{1}{2}$ – $7\frac{1}{2}$  cm. longa  $3\frac{1}{2}$  cm. lata apice acuminata vel triangulari-acuta ad summum obtusa ad centrum breve apiculata basi obtusa margine integra tenuiter chartacea, venis venulisque utraque pagine distincte elevatis, utraque pagine glabra sed subitus ad costas minute hirsuta, petiolis 3–4 mm. longis minute hirsutis, stipulis linear-lanceolatis 5 mm. longis  $1\frac{1}{2}$  mm. latis hirsutis. Flores dioecii spicati, spicis terminalibus vel quasiterminalibus solitariis vel geminatis; spicis fl. ♂ simplicibus vel paucis ramosis gracillimis suberectis 7–8 cm. longis hirsutis, sessilibus; floribus pedicellatis, pedicellis hirsutis 1 mm. longis basi bracteis singulis instructis, bracteis oblongo-lanceolatis 1 mm. longis hirsutis. Fl. ♂: sepala 4 rotundato-ovata  $\frac{2}{3}$  mm. lata  $\frac{1}{2}$  mm. longa extus hirsuta apice triangulari-acuta; stamina 4, filamentis glabris

$\frac{2}{3}$  mm. longis distinctis, antheris 2-locularibus divaricatis, loculis globosis, connectivis reniformibus glabris. Rudimentum ovarii minutum. Discus magnus pulviniformis incrassatus lobulatus inter stamna expansus. Spicæ fl. ♀ terminales rectæ erectæ solitariae subsimplices minute hirsutæ, floribus pedicellatis, pedicellis 1 mm. longis basi 1-bracteatis, bracteis 1 mm. longis hirsutis  $\frac{1}{2}$  mm. latis. Fl. ♀ : sepala 5 inæqualia, exteriora elongato-triangularia glabra  $\frac{2}{3}$  mm. longa  $\frac{1}{2}$  mm. lata apice acuto-obtusa basi haud contracta intus basi pectinato-hirsuta. Ovarium glabrum oblique ovoideum 1 mm. longum  $\frac{2}{3}$  mm. latum, stigmate 3-fido, lobis patentissimis  $\frac{1}{4}$  mm. longis. Achænum oblique lentiforme biconvexum 2-4 mm. longum 3 mm. latum apice rostratum facie muricatum.

HAB. Kōshūn : Taisenseki, leg. B. HAYATA, Juni. 1912.

Near *A. japonicum*, but differs from it in the rounded lobes of the calyx of the male flowers.

### *Mallotus* LOUR.

***Mallotus ricinoides*** MUELL. ARG. ; HEMSL. Ind. Fl. Sin. II. p. 442.

HAB. Hainan, leg. S. KONISHI, Juni. 1909. No. 82.

### *Macaranga* THOUARS.

***Macaranga Henricorum*** HEMSL. Ind. Fl. Sin. II. p. 442.

HAB. Hainan, leg. S. KONISHI.

### *Acalypha* LINN.

***Acalypha kotoensis*** HAYATA sp. nov. Suffrutescens. Ramuli apice plus minus hirsuti versus apicem foliiferi Folia longe petiolata cordata 11 cm. longa  $7\frac{1}{2}$  cm. lata apice cuspido-acuminata basi cordata margine serrulata, serrulis ascendentibus obtusis, 5-7 nervia tenuiter chartacea supra plus minus scabra subtus plus minus hirsuta, petiolis 8-10 cm. longis adpresso hirsutis, stipulis linear-lanceolatis 12 mm. longis  $1\frac{1}{2}$  mm. latis hirsutis. Fl. dioecii. F. ♀ : dense spicati ; spicis ad axillas foliorum superiorum insitis solitariis 5-6 cm. longis, floribus sessilibus 1-bracteatis bracteis late reniformibus 4-5 mm. latis 3 mm. longis margine dentatis extus hirsutis intus glabris. Sepala 3-4 inæqualia rhombica  $\frac{2}{3}$  mm. longa margine ciliolata intus glabra extus hirsuta

apice acutis. Capsula 3-coeca, coccis  $1\frac{1}{2}$  mm. longis 1 mm. latis hirsutis. Semina oblique ovoidea laevia  $1\frac{1}{4}$  mm. longa  $\frac{2}{3}$  mm. lata.

HAB. Kōtōshō, leg. MIYAKE, Sept. 1899.

Near *A. akoensis* HAY.; but differs from it in the much smaller bracts.

**Acalypha longe-acuminata** HAYATA sp. nov. Frutex; ramuli erecti recti, pilis patentibus, conspersi sulcati. Folia longe petiolata ovata vel ovato-cordata 15–20 cm. longa 8–12 cm. lata apice cundato-acuminata basi tenuiter cordata tenuiter chartacea margine serrulata, serrulis obtusis vel breve apiculatis ascendentibus, 5-nervia utraque pagine tenuiter hirsuta, petiolis 5–10 cm. longis gracillimis patento-hirsutis, stipulis linearibus 12 mm. longis 2–3 mm. latis acuminatis extus villosis intus glabris. Flores monoecii spicati, spicis fl. ♂ gracillimis axillaribus 20 cm. longis suberectis, rhachibus dense villosis, floribus breve pedicellatis, pedicellis  $\frac{1}{4}$  mm. longis, bracteis minutis  $\frac{1}{4}$  mm. longis hirsutis; floribus densissime congesto-spicatis. Fl. ♀: sepala 4 triangulari-oblonga  $\frac{1}{4}$  mm. longa totiusque lata apice acuta extus pauc'e hirsuta intus glabra; staminia 8, filamentibus basi connatis, antheris vermiformibus  $\frac{1}{4}$  mm. longis, connectivis apiculatis. Spicae fl. ♀ longissimae axillares solitariae erectæ rectæ 20 cm. longæ, pedunculis 4–5 cm. longis, stipitatae villosæ, floribus dense spicatum insitis sessilibus 1-bracteatis, bracteis reniformibus 7 mm. latis 4–5 mm. longis longe dentatis, dentibus triangularibus acuminatis 1–2 mm. longis, extus hirsutis intus glabris. Fl. ♀: sepala 3 ovato-oblonga 1 mm. longa extus hirsuta intus glabra. Capsula 3-coeca, coccis  $1\frac{1}{2}$  mm. longis 1 mm. latis dense villosis. Semina ovoidea laevia.

HAB. Akō: Naiho, leg. T. SŌMA, Sept. 1915.

Remarkable for the very long male and female spikes.

**Acalypha Matsudai** HAYATA sp. nov. Suffrutex. Rami graciles rubro-purpurascentes scandentes plus minus hirsuti lenticellis minutis linearibus notati. Folia oblongo-lanceolata 5–8 cm. longa  $1\frac{1}{2}$ –3 cm. lata apice acuminata ad summum obtusa ad centrum apiculata basi obtusa vel obtusissima vel rotundata margine serrulata utraque pagine subglabra membranacea vel tenuiter chartacea 3-nervia, petiolis 1–2 cm. longis gracillimis hirsutis. Flores monoecii spicati, floribus superioribus masculinis, flore infimo uno foemino; spicis axillaribus, gracillimis 3–4 cm. longis erectis. Flores ♂ secus rhachin

spicæ glomeratim siti, ad nodos 5–6 aggregati breve pedicellati, pedicellis  $\frac{1}{2}$  mm. longis, basi bracteis minutis hirsutis ovatis  $\frac{1}{3}$  mm. longis. Sepala 4 valvata oblonga apice acuta  $\frac{1}{3}$  mm. longa subglabra. Stamina 8, filamentis basi connatis glabris  $\frac{1}{3}$  mm. longis, antheris vermiformibus connectivis apiculatis. Fl. ♀: ad basin spicæ solitariter siti bracteis singulis instructi. Capsula 3-cocca, eocesis oblongis  $2\frac{1}{2}$  mm. longis dorso hirsutis. Semina lœvia complanato-ovoidea  $1\frac{1}{2}$  mm. longa 1 mm. lata apice breve rostrata.

HAB. Banchoryō, Raisha, leg. Y. MATSUDA, Juni. 1916.

Somewhat resemble *A. Dalzellii* HOOK. f. (in Fl. Brit. Ind. V. p. 414); but differs from it in the denticulate bracts with very much longer male spikes.

#### *Aleurites* FORST.

***Aleurites triloba*** FORST; HEMSL. Ind. Fl. Sin. II. p. 434.

*Aleurites moluccana* WILLD.; MUELL. ARG. in DC. Prod. XV.-2, p. 723.

HAB. Banchōryō, cult.

#### *Claoxylon* A. JUSS.

***Claoxylon kotense*** HAYATA sp. nov. Frutex. Rami validi teretes exsiccato cinerascentes cicatricibus foliorum approximativam notati glabri. Folia versus apicem foliorum approximativam alternatimque disposita herbacea oblonga vel oblongo-lanceolata 18–20 cm. longa 7–8 cm. lata apice acuta vel acuminata ad summum obtusa basi obtusa margine serrata, serris remotis obtusis brevibus, supra seabriuscula, petiolis 5–6 cm. longis. Flores dioecii spicati, spicis axillaribus solitariis. Fl. ♂: racemoso-spicati, spicis 6–7 cm. longis, floribus ad nodos spicæ aggregatim dispositis pedicellatis, pedicellis 3 mm. longis; sepala 3 rarius 4 oblonga  $2\frac{1}{2}$  mm. longa 2 mm. lata apice obtusa glabra; Stamina  $\infty$ , filamentis liberis 1–2 mm. longis, antheris Y-formibus, glandulis inter stamina multis bracteoliformibus  $\frac{1}{2}$  mm. longis laceratis. Capsula 3-cocca, eocesis 4 mm. longis. Semina subglobosa 3 mm. longa apice apiculata basi rotundata facie impresso-reticulata, testa crustacea nigranti.

*Claoxylon rubescens* HAYATA Gen. Ind. Fl. Formos. p. 65, (non MIQ.)

HAB. Kōtōshō, typus!; Kōshūn.

Near *C. indicum*; but differs from it in the quite glabrous leaves and racemes.

**Claoxylon indicum** HASSK.; HOOK. f. Fl. Brit. Ind. V. p. 410.

HAB. Hainan, leg. Z. KATSUMADA, Juli. 1908.

***Alchornea*** Sw.

***Alchornea kelungensis*** HAYATA sp. nov. Frutex; rami validi glabri fusco-purpurascentes. Folia alterna triangulari-cordata triangulari-rotundata vel cordata 9–12 cm. longa 8–12 cm. lata apice breve cuspidato-acuta basi rotundata vel cordata margine remote serrulata, serrulis a se 5 mm. distantibus, distincte 3-nervia, nervis a se  $30^{\circ}$ – $40^{\circ}$  egressis, chartacea vel tenuiter coriacea basi glandulis 5 notata, glandulis rotundatis 1 mm. in diametro rubescitibus, pagine supra glabra subtus tenuiter hirsuta, petiolis 3–5 cm. longis tenuiter hirsutis, stipulis caducissimis cuspidiformibus 4–5 mm. longis. Flores monoecii spicati, spicis unisexualibus vel bi-sexualibus terminalibus 7–10 cm. longis tenuiter hirsutis. Fl. ♂ ad nodos spicarum glomerati, glomerulis bracteis singulis instructis circ. 10-floratis, bracteis triangulari-cuspidatis 2 mm. longis dorso hirsutis margine ciliolatis, bracteolis inter flores ♂ multo insitis lanceolatis 1 mm. longis ciliatis, floribus pedicellatis, pedicellis 1–2 mm. longis; sepala 4–5 oblonga  $2\frac{1}{2}$  mm. longa  $1\frac{1}{2}$  mm. lata apice obtusa glabra; stamina 8–10, filamentis glabris basi dilatis connatis patentibus, antheris cordatis 1 mm. longis apice haud vel vix apiculatis. Fl. ♀: ad nodos spicæ solitarii, bracteis singulis triangulari-cuspidiformibus 3 mm. longis  $2\frac{1}{2}$  mm. latis apice cuspidatis ciliatis extus hirsutis, bracteolis duabus minutis ciliatis instruncti, pedicellis incrassatis 1 mm. longis glabris; sepala 5 triangulari-cuspidiformia  $2\frac{1}{2}$  mm. longa 2 mm. lata apice cundato-acuminata margine ciliolata basi plus minus cordata; ovarium depresso-globosum 2 mm. in diametro tenuiter hirsutum, stylis 3 basi comatis patentissimis divaricatissimis. Capsula depresso-globosa 1 cm. lata 8 mm. longa glabra tenuiter 3-sulcata. Semina complanato-ovoidea apice subtruncata basi obtusa vel truncata facie cinerascentia verrucosa 7 mm. longa.

HAB. Kelung, leg. Y. SHIMADA, Juli. 1918.

Near *A. trewioides* BENTH.; but distinguishable from it in the much

shorter styles, broader sepals and less hairy capsules. The genus is new to the flora of Formosa.

**Alchornea loochowensis HAYATA** sp. nov.

*Alchornea trecuoides* HAYATA Rev. Euph. Bux. Jap. in Journ. Coll. Sci. XX-3, p. 47, (non MUELL. ARG.)

HAB. Loo-choo: Kumejima.

***Euphorbia* LINN.**

***Euphorbia formosana* HAYATA** Gen. Ind. Fl. Formos. p. 66.

*Euphorbia orientalis* HAYATA Gen. Ind. Fl. Formos. p. 66, (non LINN.).

***Euphorbia garanbiensis* HAYATA** sp. nov. Perennis; rhizoma incrassatum; caulis diffusus a basi ramosissimus, ramis humifusis 10-15 em. longis glabris. Folia opposita oblique rotundato-ovata 8 mm. longa totiusque lata apice obtusissima basi valde oblique cordata margine integra vel obscure serrulata nervoso-marginata, textura crassinscula, subsessilia, vel petiolis 1 mm. longis, stipulis interpetiolaribus cuspidiformibus  $\frac{1}{2}$  mm. longis. Cyma axillaris. Involucrum semiglobosum 1 mm. longum 2 mm. latum glabrum, glandulis 4 late rotundatis 1 mm. latis, appendiculis reniformibus  $1\frac{1}{2}$  mm. latis integris, pedunculis 5 mm. longis; bracteolis intra involucrum linearibus laceratis  $\frac{1}{2}$  mm. longis. Fl. ♂: anthera didynamia, connectivis haud productis. Fl. ♀: ovarium glabrum leve, stylis 3 apice furcatim lobatis.

HAB. Garanbi, leg. B. HAYATA, Juni. 1912.

Near *E. sanguinea* STEUD.; but differs from it in the presence of petaloid appendages of glands.

***Euphorbia liukiensis* HAYATA** sp. nov. Perennis; caulis humifusus, ramis diffusis glabris. Folia opposita elliptica 6-7 mm. longa 4 mm. lata apice obtusissima vel rotundata basi oblique cordata margine subintegra versus apicem obscure serrulata, textura tenuiter incrassata, utraque glabra, petiolis 1 mm. longis, stipulis interpetiolaribus digitatim fissis brevissimis. Cyma axillaris. Involucrum oboconicum 1 mm. longum totiusque latum glabrum; glandulis 4, appendiculis integris  $\frac{1}{2}$  mm. latis; lobis involucri triangularibus laceratis; bracteolis intra involucrum linearibus laceratis. Capsula 3-cocca, coecis semi-ovatis  $1\frac{1}{2}$  mm. longis  $\frac{2}{3}$  mm. latis levibus. Semina levia 1 mm. longa angulato-ovoidea.

HAB. Yonakuni, leg. Y. SHIMADA, Oct. 1917.

Near *Euphorbia sanguinea* STEUD.; but differs from it in the presence of the appendage of glands.

***Euphorbia Peplus* LINN.**; DUNN et TUTCHER, Fl. Kwantung et Hongk. p. 232.

HAB. Tamsui.

**Euphorbia Tashiroi** HAYATA sp. nov. Caulis humifusus a basi ramosus, ramis 20–30 cm. longis tenuiter hirsutis. Folia opposita elliptica 13 mm. longa 7 mm. lata apice obtusissima basi oblique truncata vel tenuiter cordata margine obscure serrulata supra glabra subtus hirsuta, textura herbacea, petiolis 1–2 mm. longis hirsutis, stipulis interpetiolaribus 2-fidis, segmentis cuspidato-triangularibus  $\frac{1}{4}$  mm. longis laceratis. Cyma axillaris 7 mm. longa hirsuta. Involucrum obconicum  $\frac{1}{2}$  cm. longum glabrum, glandulis 4, appendicibus integris. Capsula tricocca, coccis hirsutis oblique ovoideo-oblongis  $1\frac{1}{4}$  mm. longis. Semina angulato-ovoidea apice obtuso-acuta basi truncata laevia fusca minus quam 1 mm. longa.

*Euphorbia hypericifolia* HAYATA Gen. Ind. Fl. Formos. p. 66, (non LINN.).

*Euphorbia humifusa* HAYATA Gen. Ind. Fl. Formos. p. 66, (non WILLD.).

HAB. Tarimukoi, leg. Y. TASHIRO, Aprili. 1895; Akō, leg. Y. SHIMADA, Mai. 1915.

Near *E. hypericifolia* LINN.; but distinguishable from it in having hirsute capsules.

## Urticaceæ.

### *Zelkova* SPACH.

**Zelkova formosana** HAYATA sp. nov. (Fig. 33-1, 2.) Arbor; ramuli fusco-purpurascentes glabri. Folia in magnitudine variabillima alterna chartacea vel tenuiter coriacea lanceolata 2–10 cm. longa 1– $3\frac{1}{2}$  cm. lata apice obtusa vel acuminata basi obtusa vel obtusissima margine serrata supra tenuissime hirsuta subtus subglabra, venis lateralibus parallelis rectis ad apicem serrarum attingentibus, petiolis 2–8 mm. longis. Flores ignoti. Achænia 3 mm. longa totiusque lata reticulato-rugulosa utroque latere prominente carinata.

*Zelkova acuminata* HAYATA Gen. Ind. p. 71, (non PLANCH.)

HAB. Fukkishō, Biōritsu-Taiko.

Resembles closely *Z. acuminata*, but distinguishable from it in the less prominent edges of the achenes.

**Zelkova tarokoensis** HAYATA sp. nov. (Fig. 33-3, 4). Arbor; ramuli

glabri fuscopurpurascentes gracillimi. Folia ovato-oblonga vel oblonga chartacea 2-3 cm. longa 10-13 mm. lata apice obtusa basi obtusissima rotundata margine serrata vel serrulata utraque glabra, petiolis 2-3 mm. longis glabris.

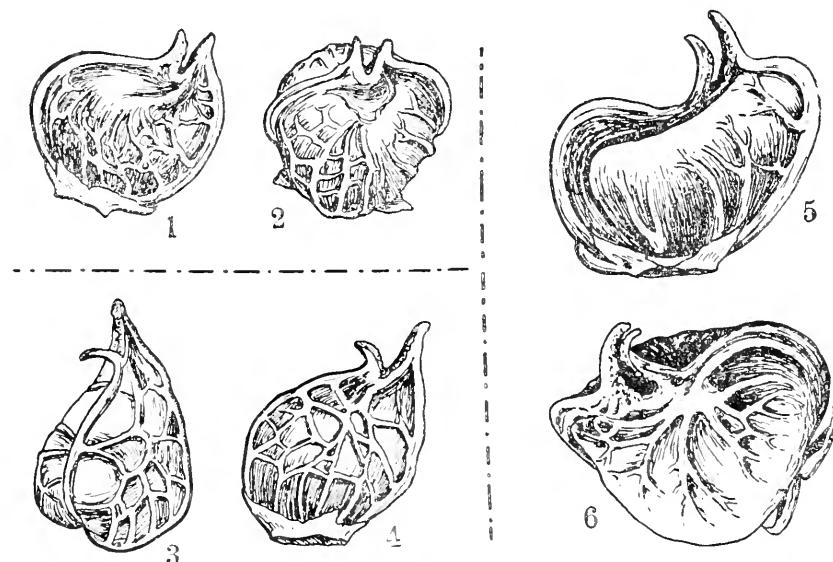


Fig. 33; 1-2, *Zelkova formosana* HAYATA; 3-4, *Z. tarokoensis* HAYATA; 5-6, *Z. acuminata* PLANCH. Achenes, seen from different sides.

Flores ignoti. Achaenia solitaria axillaria obliqua 3 mm. longa ruguloso-reticulata stigmatibus 2-fidis terminata utroque latere carinata basi latere uno profunde sulcata circ. 2-lobata.

HAB. Uchitaroko, leg. Y. MATSUDA.

Near *Z. acuminata*, but differs from it in the much smaller leaves and in the achenes which are 2-lobed on one side.

### *Morus* LINN.

***Morus acidosa*** GRIFFITH Not. Pl. Asia. IV. (1854) p. 388; KOIDZUMI Sōzoku-shokubutsu-kō, p. 34, t. 4.

*Morus alba* HAYATA Gen. Ind. p. 70, (non LINN.)

HAB. Arisan, Keitao, Suisha.

## Cupuliferæ.

*Lithocarpus* BLUME.*Lithocarpus Nakaii* HAYATA sp. nov. (Fig. 34). Arborescens. RamuliFig. 34; *Lithocarpus Nakaii* HAYATA; 1, a branch; 2, fruits.

glaucio-fuscentes vel cinerascentes. Folia chartacea vel tenuiter coriacea oblongo-lanceolata vel oblanceolata 10–12 cm. longa 2–3½ cm. lata apice subito caudato-acuminata, acuminibus 1½ cm. longis 3 mm. latis ad summum obtusis,



Fig. 35; *Lithocarpus Matsudai* HAYATA; 1, a branch; 2, a cup; 3, a portion of the cup; 4, a gland; 5, the same, seen from above.

basi cuneato-attenuata margine integra, costis venis supra hanc vel vix elevatis subtus prominente distinete elevatis, venis lateralibus gracillimis distinctis, petiolis  $1\frac{1}{2}$  em. longis tenuissime alatis. Fructus spicatum dispositi. Cupulae subplanæ plus minus concavæ  $1\frac{1}{2}$  cm. in diametro depresso-brevissimo-villosæ, cicatricibus centralibus prominente elevatis 7 mm. in diametro. Glandes castaneæ depresso-globosæ 16 mm. in diametro 13 mm. longæ apice plus minus depressæ.

HAB. Dainan-ō, leg. S. NAKAI.

Near *L. nantoensis* HAY., but differs from it in the leaves which have prominently elevated costas and veins on the under side. In *L. nantoensis* the costas and veins of the leaves are not at all elevated on the under surface.

**Lithocarpus Matsudai** HAYATA sp. nov. (Fig. 35.) Arbor; ramuli graciles lenticellis minutis dense conspersi. Folia alterna coriacea elongato-oblonga 7–10 cm. longa 3–4 cm. lata apice acuta summo obtusa basi acuta ad petiolum abeuntia margine integerrima, costa supra subtusque prominente elevata, venis gracillimis, utraque pagine glabra, petiolis  $1\frac{1}{2}$  cm. longis. Fructus spicatum dense dispositi et aggregati sessiles. Cupulae plano-obconicæ 12 mm. in diametro 5 mm. longa extus dense squamatæ, squamis adpressis minutis late triangularibus; glans globoso-trigono-pyramidalis 18 mm. longa 15 mm. lata glabra apice breve apiculata pallido-fulvescens.

HAB. Arikō-Banchi, leg. Y. MATSUDA, Mart. 1917.

Near *L. subreticulata* HAY., but differs from it in the much broader leaves and in the cups which are beset with triangular scales, but not ringed.

### Coniferæ.

**Abies Kawakamii** (HAYATA) T. ITO Encyclopædia Japonica II. p. 167; HAYATA Gen. Ind. p. 74.

### Orchideæ.

#### *Dendrobium* Sw.

**Dendrobium alboviride** HAYATA sp. nov. (Fig. 36). Caulis erectus 25 cm. longus, internodiis claviformibus 3–4 cm. longis sursum 8 mm. latis.

multi-sulcatis vaginis foliorum usque ad medium obtectis in exsiccato flavescentibus. Folia oblongo-lanceolata coriacea 5–8 cm. longa  $1\frac{1}{2}$ –2 cm. lata apice obtusissima ad apicem inaequaliter 2-lobulata basi gradatim ad vaginas attenuata 9–10-nervia glabra integra, vaginis 2 cm. longis cylindricis. Flores quasi-axillares quasi-solitarii, pedicellis (cum ovarii) 2–3 cm. longis basi bracteis instructis. Flores albi  $4\frac{1}{2}$  cm. in diametro, columna cum pede viridi. Sepalum posticum lineari-oblongum  $2\frac{1}{2}$  cm. longum 8 mm. latum apice obtusissimum glabrum basi plus minus contractum integrum, lateralia valde obliqua basi cum pede columnæ connata mentum 8 mm. formantia. Petala oblonga  $2\frac{1}{2}$  cm. longa 17 mm. lata apice rotundata basi plus minus contracta. Labellum obovato-oblongum  $2\frac{1}{2}$  cm. longum  $1\frac{1}{2}$  cm. latum apice rotundatum basi subito unguiculatum, ungue 3–4 mm. longo 3 mm. lato, supra paginae dense hirsutum. Columna brevissima 3 mm. longa, pede 9 mm. longo cum sepalis mentum formanti.

HAB. Kappanzan, leg. B. HAYATA et S. SASAKI, Juli. 1917.

Near *Dendrobium Linawianum*, but differs from it in having white flowers.

### *Bulbophyllum* THOU.

**Bulbophyllum Somai** HAYATA sp. nov. (Fig. 37). Epiphytica; caulis repens gracilimus teres 1 mm. in diametro sectionis glaber remote foliatus. Folia crassissima oblonga 13 mm. longa 6–7 mm. lata apice obtusa basi obtusa vel acuta, petiolis 2 mm. longis. Flores axillares solitarii longe pedunculati, pedunculis 3–4 cm. longis, bracteis 2–3 vaginiformibus apice acutis hyalinis feariosis. Sepala aequiformia lineari-lanceolata; posticum 18 mm. longum 3 mm. latum apice acuminatum basi plus minus dilatatum glabrum; lateralia aequiformia basi dilata cum pede columnæ connata mentum 2–3 mm. longum sormantia. Petala ovato-oblonga 3 mm. longa 2 mm. lata apice acuta. Labellum ovato-oblongum 4 mm. longum  $2\frac{1}{2}$  mm. latum apice obtusum basi

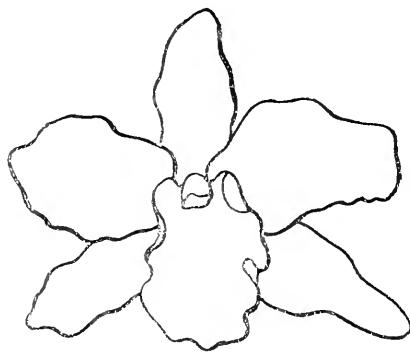


Fig. 36; *Dendrobium alboviride* HAYATA.

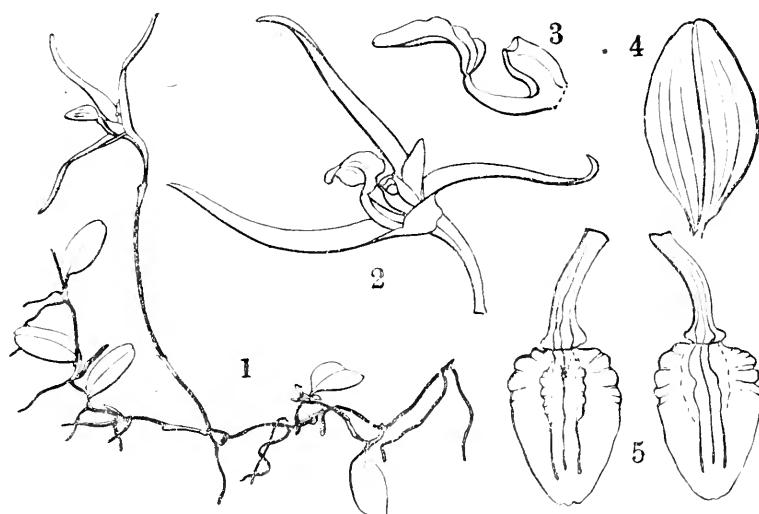


Fig. 37; *Bulbophyllum Somai* HAYATA; 1, the plant; 2, a flower; 3, column, foot and lip; 4, a petal; 5, a lip, with a columnal foot, seen from different sides.

cum pede columnæ longe producto articulatum integrum supra basin subito plicato-reflexum paralleliter 3-nervium, discis 2-linearibus medio labelli dispositis. Columna 1 mm. longa basi alata, pede longissimo ultra mentum longe producto.

HAB. Uraisha, leg. T. SÔMA, Juli. 1916.

Near *Bulbophyllum Drymoglossum* MAXIM.; but distinguishable from it in the much longer and narrower sepals.

### *Eria* LINDL.

***Eria Matsudai*** HAYATA sp. nov. Epiphytica. Pseudobulbi oblongi  $1\frac{1}{2}$  em. longi recurvi approximativim connexi. Caulis e basi pseudobulbi (annotini) oriundus  $1\frac{1}{2}$  em. longus squamis obtectus apice 2-foliatus. Folia lanceolata vel oblanceolata 8 cm. longa 18 mm. lata apice acuta basi attenuata sessilia integra crassiuscula in exsiccato membranacea glabra ex apice caulis geminatini oriunda. Racemi ex apice caulis oriundi pedunculati, pedunculis 2–3 em. longis tenuiter floccoso-hirsutis, 2–4-florati, bracteis ovatis 5 mm. longis  $2\frac{1}{2}$  mm. latis apice acutis sessilibus glabris, pedicellis 6–7 mm. longis, ovarii

obconico-cylindricis 6 mm. longis fulvo-hirsutis. Sepalum linear-i-oblongum 9 mm. longum 2 mm. latum apice obtusum; lateralia triangulari-linear-i-oblonga falcata 8 mm. longa basi dilata 5 mm. lata pede columnæ connata mentum 4½ mm. longum formantia. Petala linearia 8 mm. longa 1½ mm. lata apice obtusa. Labellum cum ungue 8-9 mm. longum; lamina in ambitu obtriangularis 6 mm. lata 3-lobata, lobis lateralibus linearibus 2½ mm. longis 1½ mm. latis apice obtusis, lobo centrali rotundato 3 mm. longo totiusque lato apice obtuso basi contracto, discis duobus versus basin laminae usque ad medium unguis extensis linearibus. Columna 3 mm. longa columniformis, pede 4½ mm. longo.

HAB. Rarazan, leg. Y. MATSUDA, Juli. 1918.

Near *Eria arisanensis* HAY.; but distinguishable from it in having much thinner and larger leaves and in the longer unguiculate base of the lips.

### *Calanthe* R. Br.

**Calanthe Takeoi** HAYATA sp. nov. Terrestris; caulis erectus 20-30 cm. longus basi vaginatus versus apicem foliatus glaber. Folia in exsiccati membranaceo lanceolata 30-40 cm. longa 5 cm. lata apice acuminatissima basi attenuata ad vaginam abeuntia integra utraque pagina glabra. Caulis florifer e basi caulis foliiferi oriundus erectus 25 cm. longus simplex glaber teres cum floribus 25 cm. longus apice flores 4-5 racemosim gerens, bracteis ovato-lanceolatis 8-10 mm. longis acutis, pedicellis cum ovariis 2-2½ cm. longis glabris. Sepala aequalia lanceolata apice obtusa 3 cm. longa 8 mm. lata basi levigata vel vix contraeta glabra. Petala oblanceolata 3 cm. longa 8 mm. lata apice obtusa basi augustata glabra. Labelli unguis cum basi columnæ connatus tubum latum formans; lamina rotundata 2½ cm. in diametro apice late truncata emarginata basi contracta versus apicem tenuissime 3-lobata margine plicato-undulata, discis secus medium labelli 2-striatum dispositis, unguibus basi calcaratis, calcaribus obconicis 8-9 mm. longis basi subito breve caudatis recurvatis. Columna 15 mm. longa validiuscula facie anteriore lirata.

HAB. Tōyenchō: Urai, leg. TAKEO ITŌ, Oct. 1917.

Near *C. Kawakamii* HAY.; but differs from it in having much smaller

flowers with much shorter spurs.

**Calanthe forsythiiflora** HAYATA Ic. Pl. Formos. IV. p. 67. Descriptio  
neta: Fructus longe racemosi, racemis 30 cm. longis, pedicellis 1½ cm.

longis gracilibus glabris deorsum recurvis  
descendentibus. Capsula pendula ovoidea  
vel obovovidea 12 mm. longa 6–7 mm. lata  
glabra elevato-striata.

HAB. Uraisha, leg. Y. SHIMADA, Aprili.  
1918.

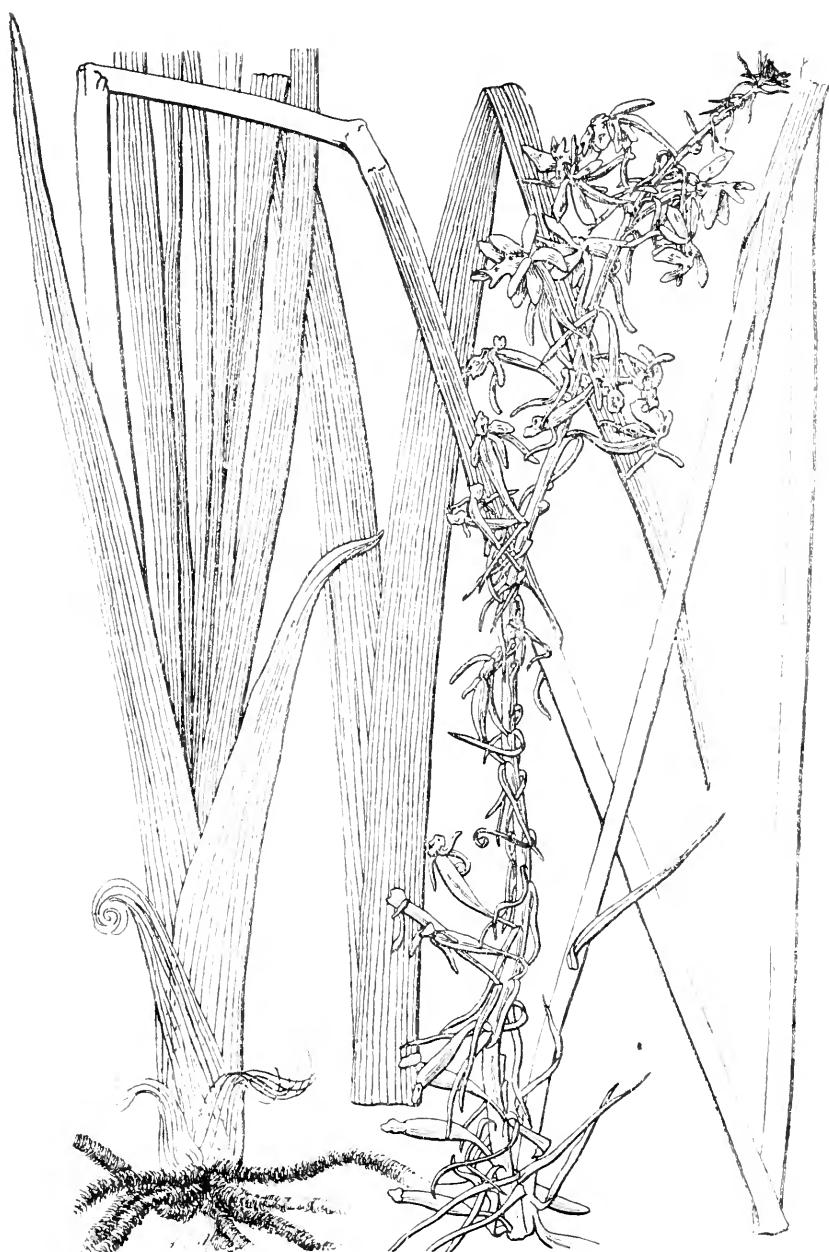


Fig. 38; *Calanthe Matsudai* HAYATA;  
1, a flower; 2, a lip.

reflexa oblongo-obovata 8 mm. longa 3½ mm. lata apice acuta basi plus minus contracta 3-nervia glabra. Petala spathulato-linearia 8 mm. longa 1½ mm. lata apice obtusissima basi attenuata 3-nervia glabra. Labellum in ambitu late triangulare 12 mm. latum 6–7 mm. longum, lobis lateralibus valde divaricatis oblongis 5–6 mm. longis 3 mm. latis apice obtusis basi latere exteriore lobulo instructis, lobo terminali in ambitu obtriangulari 4 mm. longo medio sursum divaricatum 2-lobato, lobis linearibus divaricatis 4 mm. longis 1 mm. latis apice obtusis. Discus cristaeformis ad basin medii labelli dispositus 3-seriatuſ lobulatus, lobulis lamellatis. Columna valida 2 mm. longa basi longe calcarea, calcari 1 cm. longo 1 mm. lato.

HAB. Rairazan, leg. Y. MATSUDA, Juli. 1918.

**Calanthe Matsudai** HAYATA sp. nov.  
(Fig. 38 et 39). Herba, radicibus incrassatis.  
Caulis scapiformis 100 cm. longus erectus  
simplex teres tenuissime pubescens sursum  
ad racemum abeuns efoliatus. Folia omnia  
fasciculata ex apice pseudobulbi oriunda  
linearia 60 cm. longa 1 cm. lata apice acumi-  
nata glabra membranacea. Racemi 25 cm.  
longi dense florati, bracteis linearibus post  
anthesin auctis 1–3 cm. longis acuminatis,  
pedicellis 4 mm. longis tenuiter hirsutis, ovariis  
clavato-cylindricis 8–9 cm. longis. Sepala

Fig. 39; *Culanthe Matsudai* HAYATA.

Somewhat near *C. gracilis*, but greatly different from it in having much smaller flowers, narrower sepals and in the much longer narrower bracts.

*Vanilla* Sw.

**Vanilla roncensis** HAYATA sp. nov. Scandens; caulis flexuosus glaber. Folia coriacea alterna obovato-oblonga 20 cm. longa 7 cm. lata apice subito acuta basi obtusissima integra utraque pagina glabra, nervis venis venulis utraque paginae elevatis, petiolis  $1\frac{1}{2}$  cm. longis. Flores quasi-axillares solitarii vel racemosi, pedicellis cum ovario 3–4 cm. longis. Petala sepalaque basi connatae haud patentia. Perianthium in ambitu campanulatum. Sepala aequalia ob lanceolata 4 cm. longa 1 cm. lata apice acuto-obtusa basi longe attenuata. Petala quam sepalis angustiora 4 cm. longa 8 mm. lata apice obtusa basi angustiora. Labellum  $3\frac{1}{2}$  cm. longum basi cum columna connatum et columnam toto amplectans, in explicato obtriangulare apice truncatum ad centrum lobulo uno instructum apice medio cristatum, cristis 2-seriatim dispositis, discis linearibus secus medium 2-seriatim dispositis, medio fasciculis pilorum duobus instructum, pilis fere connatis 7 mm. longis rectis, latere margine planum integrum, apice margine crispatum eae terum glabrum. Columna elongata fere 3 cm. longa in labello inclusa glabra.

HAB. Inter Rōnō et Kōsenpo, leg. B. HAYATA, Aprili. 1917.

Near *Vanilla Somai*, but differs from it in having two bundles of hairs on the hypochil of the lips.

*Galeola* LOUR.

**Galeola Matsudai** HAYATA sp. nov. Terrestris aphylla; caulis circ. 10.0 cm. longus erectus teres glaber, squamis alternatim remote dispositis oblongis 3–4 cm. longis 1–2 cm. latis acutis glabris; caulis simplex apice flores racemosim gerens. Racemi 18 cm. longi fulvo-floccosi vel glabri, bracteis oblongis 1–2 cm. longis, pedicellis cum ovarii cylindricis 1–1 $\frac{1}{2}$  cm. longis. Sepala aequalia oblonga 18 mm. longa 7–8 mm. lata apice acuto-obtusa basi plus minus contracta extus fulvo-floccosa intus glabra patentia. Petala oblongo-lanceolata 1 $\frac{1}{2}$  cm. longa 6 mm. lata glabra apice acuto-obtusa basi plus minus contracta integra. Labellum rotundatum 1 $\frac{1}{2}$  cm. in diametro valde

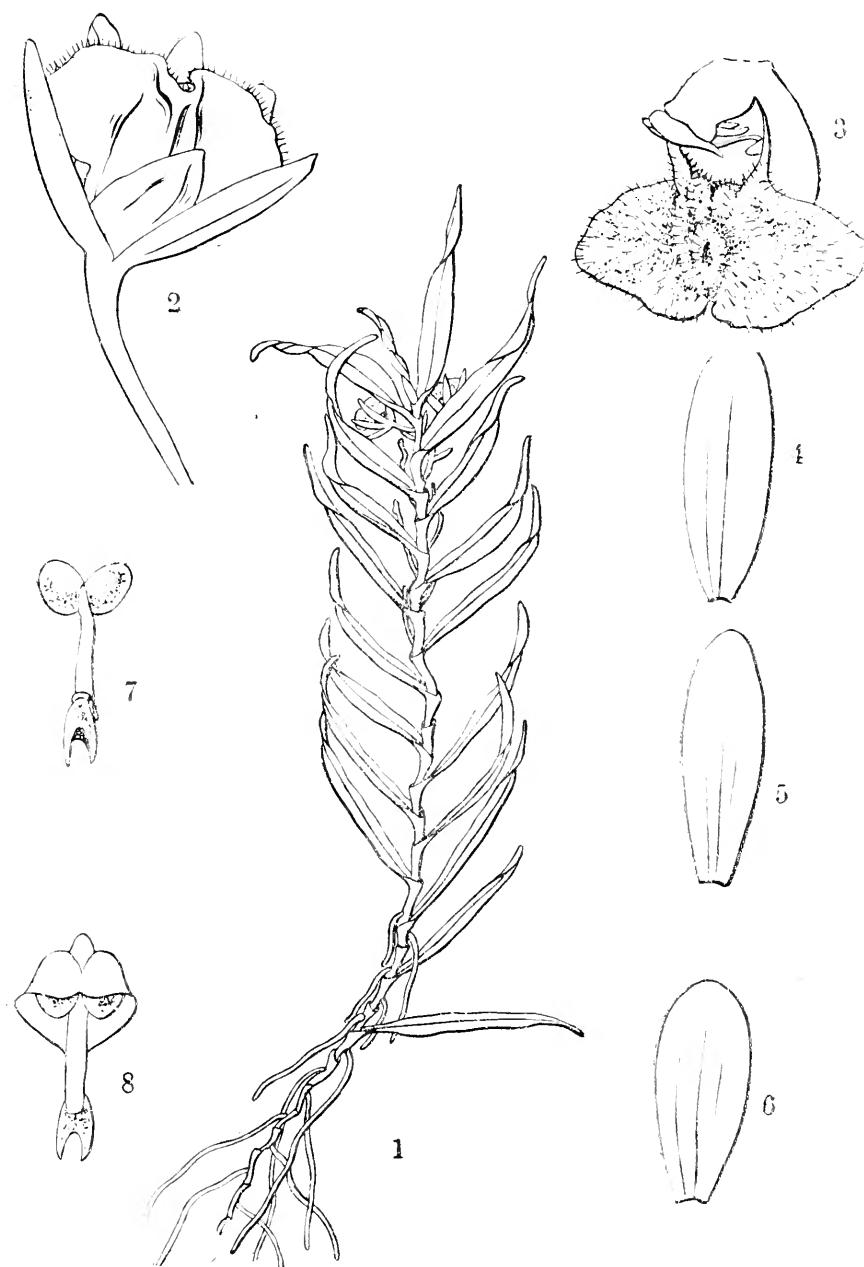


Fig. 4O; *Gastrochilus Matsudai* HAYATA; 1, the plant; 2, a flower, seen from below; 3, a lip and column; 4, a dorsal sepal; 5, a lateral sepal; 6, a petal; 7, pollinia on a caudicule; 8, the same, with an operculum.

concavum margine eroso-fimbriatum apice obtusissimum basi contractum sessile-basi columnæ adnatum pagine supra dense cristato-pilosum subtus glabrum. Columna 7 mm. longa; operculum floccoso-hirsutum.

HAB. Akōchō: Paiwan, Juni. 1917.

Near *Galeola Lindleyana* REICH. f. (KING. t. 352); but differs from it in having much more hirsute lips.

### *Gastrochilus* DON.

**Gastrochilus Matsudai** HAYATA sp. nov. (Fig. 40). Epiphytica ad substratum toto adpresso prostrata glabra. Folia alterna distiche disposita linearilanceolata 3 em. longa  $3\frac{1}{2}$  mm. lata apice obtusa glabra costa, supra impressa subtus elevata, crassiusecula basi hand vel vix contracta cum vaginis articulata, vaginis 3 mm. longis glabris. Racemi oppositifolii vel quasi-axillares 2 em. longi 3-4-florati, pedicellis divaricatis cum ovariis 4-5 mm. longis glabris. Flores 8-9 mm. in diametro. Sepalum posticum obovatum valde concavum 5-6 mm. longum 3 mm. latum apice obtusissimum basi hand vel vix contractum, lateralia oblonga fere conformia. Petala obovato-oblonga 5 mm. longa valde concava glabra. Labellum in ambitu triangulare, lumina 6-7 mm. lata apice rotundata medio apicis retusa pagine supra toto barbata, disco calloso medio labelli insito; labellum basi calcaratum, calcare triangulari 3 mm. longo ad orem 2 mm. lato. Columna brevissima 1 mm. longa.

HAB. Mt. Daibuzan, Nov. 1918, leg. Y. MATSUDA.

Near *Gastrochilus fuscopunctatus* HAY., but distinguishable from it in the much narrower sepals and petals and in the much broader epichilus of the lips.

### *Anæctochilus* BLUME.

**Anæctochilus koshunensis** HAYATA Ie. Pl. Formos. IV. p. 105.

HAB. Daibuzan, leg. Y. MATSUDA, Nov. 1918.

### *Orchis* LINN.

**Orchis kiraishiensis** HAYATA sp. nov. (Fig. 41). Herba humilis. Caulis simplex 15 cm. longus basi vaginis 1-2 instructus glaber erectus medio-alternatim 2-foliatus apice racemosim 2-3-floratus. Folia linearilanceolata

4-5 cm. longa 8 mm. lata apice acuta vel acuminata integra glabra basi haud attenuata ad vaginas abeuntia, veginis glabris cylindricis  $1\frac{1}{2}$  cm. longis. Flores albo-rosacei patentes  $2\frac{1}{2}$  cm. in diametro, pedicellis brevibus cum ovarii fusiformibus 1 cm. longis. Sepalum posticum 8 mm. longum 3 mm. latum



Fig. 41; *Orchis kiraishiensis* HAYATA; 1, the plant; 2, a flower, sepals and petals taken off; 3, a lip; 4, a dorsal sepal; 5, a lateral sepal; 6, a petal.

oblongum apice acutum basi plus minus contractum; lateralia obliqua ovato-oblonga falcata 8-9 mm. longa 3½ mm. lata apice obtusa dorso apice minuto cornuta glabra. Petala glabra minora ovato-oblonga 6 mm. longa 3 mm. lata apice obtusa basi latere anteriore subauriculata latere posteriore basi acuta. Labellum basi longe calcaratum, lumina in ambitu obtriangularis 13 mm. longa 15 mm. lata apice leviter 3-lobata, lobo centrali 5 mm. longo totiusque lato apice truncato medio sinuato ad centrum sinus lobulo uno triangulari breve aristato instructo, calceum 9 mm. longo ad orem triangulari-dilato 3 mm. lato. Columna 3 mm. longa erecta plus minus posteriore recurva.

HAB. Kiraishizan, ad 10,000 ped. alt., leg. S. OHASHI, Aug. 1918.

Near *O. pauciflora* FISCH.; but differs from it in having sessile lips. The genus is new to the flora of Formosa.

### Scitamineæ.

#### *Alpinia* LINN.

**Alpinia agiokuensis** HAYATA sp. nov. Rhizoma repens squamis rotundato-ovatis dense obtectum, squamis 1½ em. longis latioribus quam longis rhizomatem amplectantibus. Caulis cum inflorescentia 100-80 cm. longus dense breveque villosus erectus basi squamis 3-4 obtectus, squamis 3-15 em. longis extus dense villosis intus glabris. Folia 2-3, ligulis 2-lobatis villosis 2-3 mm. longis, petiolis 3 em. longis, lamina oblongo-lanceolata 38 cm. longa 6 cm. lata apice acuminata supra parce subtus dense villosa apice cuspidato-acuminata basi longe attenuata. Spicae terminales solitariae 10 em. longae, pedunculo 7-8 em. longo villoso basi bractea singula instructo, bractea linearilanceolata 5-15 cm. longa 1-2½ em. lata apice cauda linearis 2-3 cm. longa instructa extus villosa intus glabra. Flores fere sessiles extus tenuiter villosi basi bracteolis minutis oblongis obtusis villosis instructi; ovarium villosum obovoideum 2 mm. longum; calyx cylindricus 11 mm. longus 5 mm. latus extus tenuiter villosus apice 3-lobatus; corollæ tubus cum calyce aequilongus 11 mm. longus melius 2 mm. apice 3 mm. latus extus intusque parce hirsutus, lobis 3 aequalibus spathulatis valde concavis extus villosis intus glabris apice rotundatis; labellum extus glabrum intus hirsutum

sessile obovatum 9 mm. longum apice breve 2-lobatum, lobis minutis se-divaricatis, margine deorsum integrum sursum denticulatum, basi utroque latere staminodiis instructum, staminodiis linear-lanceolatis 6 mm. longis 1 mm. latis glabris; stanæ ultra tubum corollæ 15 mm. exsertum; filamento ultra tubum corollæ 8 mm. longo glabro, anthera 6 mm. longa secus medium plicata stylum amplectanti, connectivo latiore in explicato 3 mm. lato; stylo glabro, stigmate terminali infundibuli-formi 1 mm. lato margine pectinato-ciliolato.

HAB. Agioku, leg. B. HAYATA, Mai. 1916, ad. 1,200 ped. alt.

Near *A. japonica*, but differs from it in having a little smaller flower with no distinct macuration on the lips, and in the presence of a large bract at the base of the spikes.

NOTE: Calyx and corolla reddish towards the tip; anthers white.

**Alpinia densespicata** HAYATA sp. nov. Folia superiora fere sessilia vel breve petiolata lanceolata 60–70 cm. longa 10 cm. lata apice acuminata basi attenuata ad marginem hirsuta utraque pagine glabra, ligulis 2-lobatis apice dense hirsutis. Spicae rachis florifera 15 cm. longa fulvo-sericeo-villosa densissime florifera; bracteis late obovatis 15 mm. longis 13 mm. latis apice obtusissimis rotundatis; ovarium subglobosum 3 mm. longum 2 mm. latum dense tomentosum; calyx cylindrico-campanulatus 12 mm. longus 5 mm. latus irregulariter 2-3-dentatus uno latere plus minus fissus vel haud fissus margine basi extusque plus minus hirsutus; petala 3 basi ad 1 cm. altitudinem conata 2½ cm. longa dorsale, latius 1½ cm. latum margine ciliolatum apice late rotundatum, lateralia angustiora; labellum late ovato-rhomboideum sessile 1½ cm. longum totiusque latum margine eroso-denticulatum; anthera 8–9 mm. longa 4 mm. lata apice 2-lobata; stylo sursum hirsuto; stigmate infundibuli-formi margine extusque dense hirsuto.

HAB. Shichiseitonzan, leg. S. SASAKI, Mart. 1910.

Near *A. macrocephala*; but differs from it in the total absence of the bracts in the fruiting spikes.

**Alpinia dolichocephala** HAYATA sp. nov. Folia superiora lanceolata sessilia 70–90 cm. longa 10–12 cm. lata apice subito et abrupte candidata, candidis brevibus circ. 1 cm. longis, basi subito attenuata margine brevissime hirsuta utraque pagine glabra, ligulis elobatis vel 2-lobatis obtusis extus villosis.

Spicæ rhachis florigera 15 cm. longa fulvo-sericeo-villosa dense florigera; bracteis 3 cm. longis subconchiformibus in explicato  $2\frac{1}{2}$  em. latis apice subrotundatis ad medium arista hirsuta una 1–2 mm. longa instructis margine et basi hirsutis; floribus sessilibus; ovarium subglobosum 2 mm. longum totiusque latum dense villosum; calyx subcylindricus 2 cm. longus 8 mm. latus uno latere a basi usque ad 5 mm. altitudinem fissus apice obtusissimus mucronatus extus brevissime hirsutus intus glaber; petala 3 a basi usque ad 1 cm. altitudinem connata; dorsale latius  $2-2\frac{1}{2}$  cm. latum valde concavum erectum cuculliforme glabrum sursum margine hirsutum apice rotundatum ad centrum breve mucronatum; lateralia angustiora 8 mm. lata apice rotundata valde concava; labellum late rhomboideum 4 cm. longum totiusque latum sessile apice triangulare obtusum ad summum 2-lobatum margine erosodenticulatum basi ad faucem glabrum haud hi satum albicans, versus medium purpureo-striatum; staminodia 0; stamen erectum vel plus minus arenatum, filamento glabro; anthera linearis 1 cm. longa, connectivo dorso carinato apice breve 2-lobato; stylus glaber; stigmate plus minus hirsuto. Spica fructifera 20–30 cm. longa dense fructifera, fructibus globosis  $1\frac{1}{2}$  em. in diametro brevissime hirsutis, seminibus tetrahedriformibus 4 mm. longis arillis membranaceis albis obtectis.

HAB. Inter Rōnō et Kosenpo, leg. B. HAYATA, Aprili. 1915.

Near *Alpinia macrocephala* HAY.; but distinguishable from it in the much longer spikes and in the total absence of the bracts in the fruiting spikes.

**Alpinia Elwesii** Bot. Mag. t. 8,651.

**Alpinia Galanga** WILLD.; HAYATA Gen. Ind. p. 82.

HAB. Taihoku (cult.), leg. S. SAWADA, Juli. 1914.

**Alpinia hokutensis** HAYATA sp. nov. Caulis  $1\frac{1}{2}$  mm. altus. Folia superiora lanceolata circ. 50 cm. longa 7–8 cm. lata apice gradatim acuminata basi attenuata margine hirsuta utraque pagine glabra, ligulis apice rotundatis elobatis ciliolatis. Spicæ erectæ vel inclinatae, partibus florigeris 15–20 cm. longis laxè floratis glabratris, pedicellis subglabris 1 cm. longis; bracteis conchiformibus glabris  $1\frac{1}{2}$  cm. longis apice obtusissimis alabastrum floris amplectantibus; ovarium globosum 2 mm. longum  $1\frac{1}{2}$  mm. latum brevissime hirsutum; calyx cylindricus 1 cm. longus glaber apice 3–5-dentatus. Petala

3, 2 cm. longa basi usque ad 1 cm. altitudinem connata glabra; dorsale latius 1 cm. latum apice rotundatum valde concavum; lateralia 7 mm. lata apice rotundata; labellum late ovato-rotundatum 18 mm. longum totiusque latum apice rotundatum margine crispato-crenulatum glabrum flavum medio rubescens basi ad faucem tenuiter hirsutum; stamen arcuatum, parte libera filamenti 1 cm. longa; anthera 5 mm. longa; connectivo latiore in explicato 3 mm. lato crassiusculo breve hirsuto-plateo apice externe reflexo 2-3-denticulato; stylus glaber, stigmate infundibuliformi plus minus hirsuto.

HAB. Shichiseitonzan, leg. Y. SHIMADA, ad 300 ped. alt.; Hokuto, leg. Y. SHIMADA, Mai. 1917, (typus!).

Near *Alpinia Schumanniana* VAL.; but differs from it in the much smaller flowers with distinct staminodes.

**Alpinia Kawakamii** HAYATA Ic. Pl. Formos. V. p. 222; Gen. Ind. p. 82.

HAB. Sōseikyaku, leg. B. HAYATA, Mai. 1916.

NOTE: Leaves very dark green above, villose beneath; flower-buds light pink.

**Alpinia kelungensis** HAYATA Ic. Pl. Formos. V. p. 216, Fig. 76-C., Gen. Ind. p. 82.

HAB. Kelung, Heirinbi, Agioku, Ōchōbi.

NOTE: 2-3 m. tall; leaves dark green, shining above; pedicels reddish; ovary green; fruits scarlet.

**Alpinia kusshakuensis** HAYATA sp. nov. Folia superiora lanceolata cire. 50 cm. longa 10 cm. lata apice subito acuminata basi attenuata breve petiolata vel sessilia utroque pagina glabra sed ad marginem brevissime villosa, ligulis 8 mm. longis extus brevissime villosis intus glabris 2-lobatis, lobis obtusissimis. Spicæ densiusculæ florigeræ 15 cm. longæ; rhachis 15 cm. longa dense villosa, floribus subsessilibus vel breve pedicellatis. Ovarium dense villosum cylindrico-ovoides 1 em. longum 5 mm. latum; bracteis conchiformibus 2½-3 em. longis apice 2-3-dentatis in explicato 2½ em. latis glabris apice et margine plus minus hirsutis; calyx oboconico-cylindricus 2 em. longus extus basi hirsutus ab apice usque ad medium fissus apice obtusissimus; petala 3-4-5 em. longa a basi usque ad 1 em. altitudinem connata; dorsale latius obovato-spathulatum 1½ em. latum apice plus minus hirsutum; lateralia

angustiora; labellum basi cum petalo connatum, parte libera (lamina) ovato-rhomboidea 4-4½ cm. longa 3 cm. lata apice longe caudata, cauda 1 cm. longa, margine subintegra apice ad summum obtusa laud lobata utraque pagina glabra medio carinata margine flava versus medium rubescente margine erosodenticulata basi intus densissime tomentosa, utroque latere staminodio linearis 4-5 mm. longo instructa. Stamen erectum vel recurvum 4 cm. longum a basi usque ad 1½ cm. cum petalis labelloque connatum; anthera late linearis 1½ cm. longa 7 mm. lata, connectivo incrassato brevissime villoso apice 2-lobato; stylo 4-5 cm. longo glabro, stigmate infundibuliformi hirsuto.

HAB. Kusslaku, leg. B. HAYATA, Mai. 1916.

Near *A. uraiensis* HAY.; but differs from it in the much smaller flowers with much narrow anthers.

**Alpinia macrocephala** HAYATA Ic. Pl. Formos. V. p. 222; Gen. Ind. p. 82.

HAB. Arisan: Inter Keitao et Goshōrin, leg. B. HAYATA, ad 4,000-6,000 ped. alt., Aprili. 1916; inter Funkiko, Karapin et Taroyen.

Very remarkable in the presence of large bracts embracing the fruits in the basal portions of the spikes.

**Alpinia mediomaculata** HAYATA sp. nov. Caulis 1-2 m. altus. Folia superiore sessilia lanceolata 46 cm. longa 7 cm. lata apice acuminata basi acuta utraque glabra margine parce hirsuta, ligulis 2-lobatis extus hirsutis intus glabris. Spicae rhachis florifera 10-15 cm. longa fulvo-villosa dense florigera, floribus sessilibus vel brevissime pedicellatis; bracteis obovatis 2 cm. longis 1 cm. latis basin alabastri floris amplectantibus apice obtusis plus minus hirsutis vel glabris; floribus sessilibus; ovarium obconico-cylindricum 3 mm. longum 2 mm. latum breve tomentosum; calyx obconico-cylindricus 12 mm. longus 5 mm. latus basi extus plus minus hirsutus sursum glaber apice 2-3-lobatus ad marginem loborum ciliolatus uno latere ab apice usque ad medium fissus; petala 3; 4 cm. longa a basi usque ad 1 cm. altitudinem connata; dorsale latius 1½ cm. latum apice obtusissimum margine hirsutum; lateralia angustiora 7 mm. lata; labellum late ovato-rhomboideum sessile 2½-3 cm. longum 3 cm. latum apice breve 2-lobatum margine sursum erosodenticulatum deorsum integrum ad basin circum tubum dense hirsutum versus marginem

subalatum medio rufum. Stamen : filamenti parte libera 6-7 mm. longa complanata brevissime hirsuta ; anthera linearis 11 mm. longa 4 mm. lata apice 2-lobata ; stylus 2 $\frac{1}{2}$  cm. longus glaber, stigmate infundibuliformi hirsuto. Spica fructifera 25 cm. longa, fructibus globosis 13 mm. longis tenuiter hirsutis, seminibus tetrahedriformibus 3 $\frac{1}{2}$  mm. longis.

HAB. Inter Rahao et Tonroku, leg. B. HAYATA, Mai. 1916.

Near *Alpinia macrocephala* HAY. ; but separable from it in total absence of bracts in the fruiting spikes ; also near *A. densespicata*, but differs from it in the quite smooth (not costulate) fruits.

NOTE : Plant 1-2 m. tall ; bracts and sepals pink or white ; fruits orange-scarlet.

**Alpinia Shimadai** HAYATA Ic. Pl. Formos. V. p. 219. Descriptio aucta :—Spica fructifera circ. 10 cm. longa 3-4 cm. lata, fructibus globosis 13 mm. in diametro minute hirsutis plus minus costulatis ; calycibus persistentibus, bracteis evanescentibus.

HAB. Chikushizan ; Nankō, Daiman-ō, Soseikyaku, Shakkō.

**Alpinia speciosa** K. SCHUMANN ; HAYATA Ic. Pl. Formos. V. p. 227 ; Gen. Ind. p. 82.

HAB. Shōkei, Busegan, Seisui, leg. B. HAYATA, Mai. 1917.

NOTE : Plant 2-3 m. tall ; spikes somewhat nodding ; lip yellow at the margin, red towards the center.

**Alpinia suishaensis** HAYATA sp. nov.

*Alpinia* sp. HAYATA Ic. Pl. Formos. V. p. 217.

HAB. Suisha, Holisha, Musha.

Differs from *A. kelungensis*, in the much narrower leaves and in the labellum with two lobes at the apex.

NOTE : Fruits scarlet-red ; much smaller than those of *A. kelungensis*.

**Alpinia tonrokuensis** HAYATA sp. nov. Caulis 2-3 m. altus. Folia superiore subsessilia, ligulis 2-lobatis 8 mm. longis extus villosis intus glabris obtusis, laminis lanceolatis 55 cm. longis 10 cm. latis apice subito acuminatis ad caudam linearem 2 cm. longam 2 mm. latam abeuntibus margine integerimis ad marginem hirsutis ultraque pagine glabris basi acutis. Spicæ erectæ cylindricæ dense floriferae 20-25 cm. longæ, floribus fere sessilibus ; rhachis

dense fulvo-villosa; bracteis conchiformibus chartaceo-membranaceis 3 mm. longis in explicato 3 cm. latis apice subrotundatis plus minus mucronatis; floribus sessilibus; ovarium 3 mm. longum totiusque latum dense villosotomentosum; calyx 2 em. longus extus deorsum plus minus hirsutus sursum glaber cylindrico-obconicus intus glaber apice obtusissimus latere uno ad medium fissus; petala 3 obovata 4–5 cm. longa basi attenuata a basi usque ad 1 em. altitudine in connata apice obtusissima 13 mm. lata; labellum basi cum petali tubo connatum, parte libera ovato-rhomboidea 3–4 cm. longa  $2\frac{1}{2}$  cm. lata apice cando-triangulari acuta ad summum breve 2-lobata margine subintegra utraque glabra basi latissime acuta margine flava versus medium centrale rubescens, basi ad faucem dense hirsuta staminodiis minutis utroque latere instructa; stamen erectum vel recurvum, anthera linearis 1 $\frac{1}{2}$  mm. longa utroque latere alato; connectivo membranaceo latiore in explicato 6 mm. lato apice obtuso 2-lobato hirsuto, intus medio 2-loculifero; stylo subglabro vel plus minus hirsuto, stigmate infundibuliformi hirsuto.

HAB. Kusshaku, leg. B. HAYATA, Mai. 1916.

Near *A. formosana* SCHUM.; but differs from it in the densely tomentose ovary and in the labellum nearly cuspidate at the apex; also very near *Alpinia kusshakuensis*; but distinguishable from it by the lips which are shortly 2-lobed at the tip, in the thinner hirsute connectives, and in the smaller anthers.

NOTE: Plant 2–3 m. tall; bracts and sepals pink; corolla white; lip yellow at the margin, but yellow-red towards the center; anthers narrower than those of *Alpinia uraiensis* HAY.

**Alpinia uraiensis** HAYATA Ic. Pl. Formos. V. p. 224; Gen. Ind. p. 82.

HAB. Urai, Tonroku, Kaukaukei, Suisha.

NOTE: Bracts reddish-purple at the tip; calyx nearly white; lip yellow, reddish at the center; anthers very thick; fruits light scarlet.

### Liliaceæ.

#### *Pseudosmilax* HAYATA g. n.

Flores dioecii. Fl. ♀: perianthium gamophyllum apice brevissime 3-

lobatum. Stamina 9 fere distincta. Flores ♀ ignoti. Herba scandentissima, foliis cirriferis. Species due in Formosa incole.

Just intermediate between *Smilax* and *Heterosmilax*. The new genus resembles *Smilax* in having nearly distinct stamens; but differs from the latter in the gamophyllous perianth. It is also allied to *Heterosmilax* in the gamophyllous perianth, but distinguishable from the latter in the nearly distinct stamens which amount as many as nine.

**Pseudosmilax seisuiensis** HAYATA sp. nov. (Pl. VI.) Caulis teres scandentissimus glaberrimus stramineus (in exsiccato). Folia alterna chartacea vel tenuiter coriacea ovata 7–11 cm. longa 4–7 cm. lata apice triangulari-acuta ad summum brevissime apiculata basi late truncata cordata vel rotundata margine integra 5-nervia, nervis ad apicem convergentibus, venulis reticulatis, nervis venis venulisque utraque pagine distincte elevatis, petiolis 1–3 cm. longis prope basin utroque latere cirriferis, cirris filiformibus circ. 10 cm. longis volubilibus. Flores umbellati, umbellis 50–60-floratis longe pedunculatis, pedunculis 5 cm. longis complanatis, pedicellis 1½–2 cm. longis glabris basi bracteolis minutis digitiformibus instructis. Perianthium glabrum obovoidem vel oblongum gamophyllum 3 mm. longum 2 mm. latum apice ore minute 3-lobatum. Stamina 9 fere distincta fere contracta, filamentis 1 mm. longis, antheris linearibus 1½ mm. longis ¼ mm. latis apice acuminatis apiculatis adnatis introrsum dehiscentibus. Rudimentum ovarii nullum. Flores ♀ ignoti.

HAB. Inter Seisui et Gūnkutsu, leg. B. HAYATA et S. SASAKI, Mai, 1917.

Near *Heterosmilax* in the gamophyllous perianth; but differs from it in having as many as nine stamens with nearly distinct filaments, and much longer linear anthers. In *Heterosmilax*, stamens are usually three, and have nearly connate filaments and very much shorter reniformed anthers.

**Pseudosmilax hogoensis** HAYATA sp. nov. Caulis scandentissimus trigonus 6–7 mm. in diametro sectionis glaber. Folia alterna adulta magna ovato-cordata 25 cm. longa 18 cm. lata apice acuta basi cordata 5-nervia, folia juvenia ovato-oblonga 18 cm. longa 8 cm. lata apice acuminata basi rotundata obtusa chartacea vel membranacea margine integra, petiolis 3 cm. longis prope basin utroque latere cirriferis, cirris 2–5 cm. longis volubilibus. Flores umbellati, umbellis 40–50-floratis longe pedunculatis, pedunculis 6 cm. longis

vale complanatis, pedicellis 1 cm. longis basi bracteis et bracteolis minutis instructis. Perianthium obovoidem vel oblongum 3 mm. longum 2 mm. latum apice brevissime 3-lobatum. Stamina 9 fere distineta, filamentis 1 mm. longis, antheris linearibus  $1\frac{1}{2}$  mm. longis  $\frac{1}{2}$  mm. latis apice obtusis adnatis. Ovarium nullum. Fl. ♀ ignotus.

HAB. Hōgō, ad 4,000 ped. alt. leg. B. HAYATA, Aprili. 1916.

Near *Pseudosmilax seisuiensis* HAY.; but distinguishable from it in the much more elongate leaves of thinner texture.

*Smilax* LINN.

*Key to species.*

- |   |  |
|---|--|
| 1. Stem erect; leaves small .....                               | 2.   |
| Stem scandent or climbing .....                                 | 4.   |
| 2. Petiole base vaginate without tendrils .....                 | <i>S. tenuissima</i> .                     |
| Petiole base not vaginate, tendrils more or less distinct ..... | 3.   |
| 3. Tendrils short or nearly none.....                           | <i>S. gracillima</i> .                     |
| Tendrils long .....   | <i>S. randaiensis</i> .                    |
| 4. Stem armed and very much scabrous or warty .....             | <i>S. trachycadra</i> .                    |
| Stem armed or unarmed, but neither scabrous nor warty .....     | 5.   |
| 5. Stem conspicuously armed.....                                | 6.   |
| Stem not or slightly armed .....                                | 9.   |
| 6. Stem densely beset with long soft spines .....               | <i>S. horridiramula</i> .                  |
| Stem remotely beset with short stiff spines .....               | 7.   |
| 7. Leaves herbaceous.....                                       | <i>S. formosana</i> .                      |
| Leaves coriaceous .....   | 8.   |
| 8. Leaves linear .....  | <i>S. elongato-reticulata</i> .            |
| Leaves oblong .....   | <i>S. elongato-umbellata</i> .             |
| 9. Adult leaves herbaceous .....                                | 10.  |
| Adult leaves chartaceous or coriaceous .....                    | 11.  |
| 10. Leaves ovato-lanceolate or linear .....                     | <i>S. herbacea</i> var. <i>daibensis</i> . |
| Leaves cordately rounded .....                                  | <i>S. ovato-rotunda</i> .                  |
| 11. Petiole base auricled .....                                 | <i>S. prolifera</i> .                      |
| Petiole base not auricled .....                                 | 12.  |

12. Leaves nervo-marginate ..... *S. nervo-marginata*.  
 Leaves not nerved at the margin ..... 13.
13. Leaves lanceolate or ovate-lanceolate ..... 14.  
 Leaves ovate or ovate-rounded ..... 15.
14. Peduncles very short or nearly sessile, leaves 3-nerved ..... *S. glabra*.  
 Peduncles long .. *S. lanceifolia*, *S. liukiuensis*, *S. takaoensis*, *S. arisanensis*.
15. Leaves larger ..... 16.  
 Leaves smaller ..... 17.
16. Petiole base longer and distinctly winged; leaf base acute.. *S. taiheiensis*.  
 Petiole base shorter and nearly wingless; leaf base rounded *S. stenopetala*.
17. Quite unarmed .. ..... *S. planipedunculata*.  
 More or less armed ..... *S. China*.

**Smilax arisanensis** HAYATA (Fig. 42, 1-6) Mater. Fl. Formos. p. 356.

Descriptio aucta: Fl. umbellati; perianthii segmenta 6, exteriora majora oblonga 4 mm. longa  $1\frac{1}{2}$  mm. lata, interiora minora oblongo-linearia  $3\frac{1}{2}$  mm. longa 1 mm. lata apice obtusa; stamina 6, filamentis  $1\frac{1}{2}$  mm. longis, antheris oblongo-rotundatis  $\frac{1}{3}$ - $\frac{1}{2}$  mm. longis.

HAB. Arisan.

**Smilax elongato-reticulata** HAYATA (Fig. 43, 7-14) Mater. Fl. Formos. p. 357. Descriptio aucta: Flores ♂ umbellati, pedicellis 7 mm. longis; rhachis umbellarum elongata 2 mm. longa  $\frac{2}{3}$  mm. lata, bracteis minutis oblongis  $\frac{1}{2}$  mm. longis obtusis; pedunculi umbellarum 1 cm. longi solitarii axillares. Perianthii segmenta 6, exteriora oblonga  $4\frac{1}{2}$  mm. longa 2 mm. lata apice obtusa, interiora linearispathulata 4 mm. longa 1 mm. lata apice obtusa. Stamina 6, filamentis basi usque ad 1 mm. cum segmentis perianthii connatis, partibus liberis  $1\frac{1}{2}$  mm. longis, antheris oblongo-ovatis 1 mm. longis apice acutis. Ovarii rudimentum 0. Baccæ late globosa nigricans 7 mm. longa totiusque lata 2-3-sperma. Semina purpureo-rubescens levissima 4 mm. longa  $3\frac{1}{2}$  mm. lata oblongo-globosa plano-convexa.

HAB. Tatsutaka, Oiwake, ad 7,500 ped. alt., leg. B. HAYATA, Aprili. 1916.

NOTE: Fruits dark purple glaucous; perianth pale green; ovary green; anthers pale yellow.

**Smilax formosana** HAYATA sp. nov. (Fig. 43, 1-6). *Smilax Sieboldii*

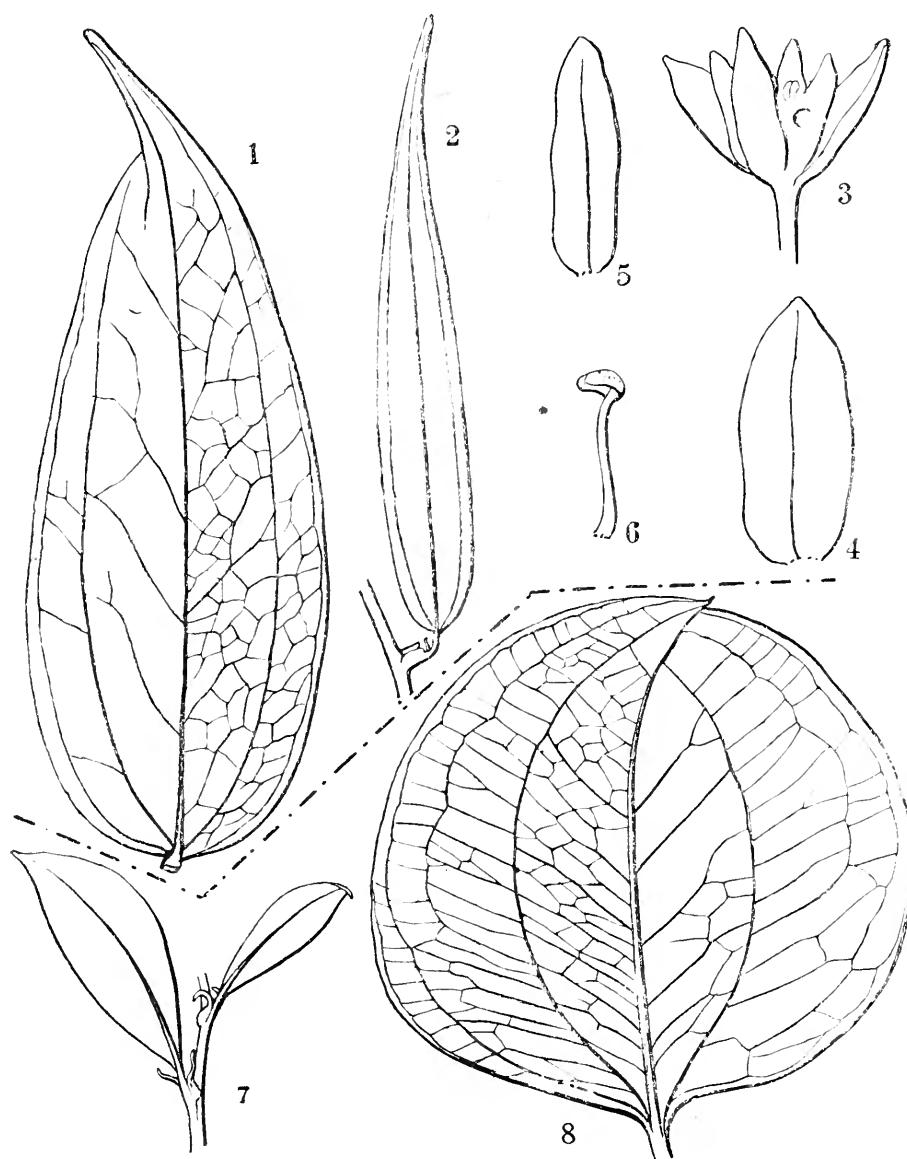


Fig. 42; 1-6, *Smilax arisanensis* HAYATA; 1, 2, different forms of leaves; 3, a male flower; 4, an outer segment; 5, an inner segment; 6, a stamen; 7-8, *Smilax China* LINN.; 7-8, young and adult leaves.

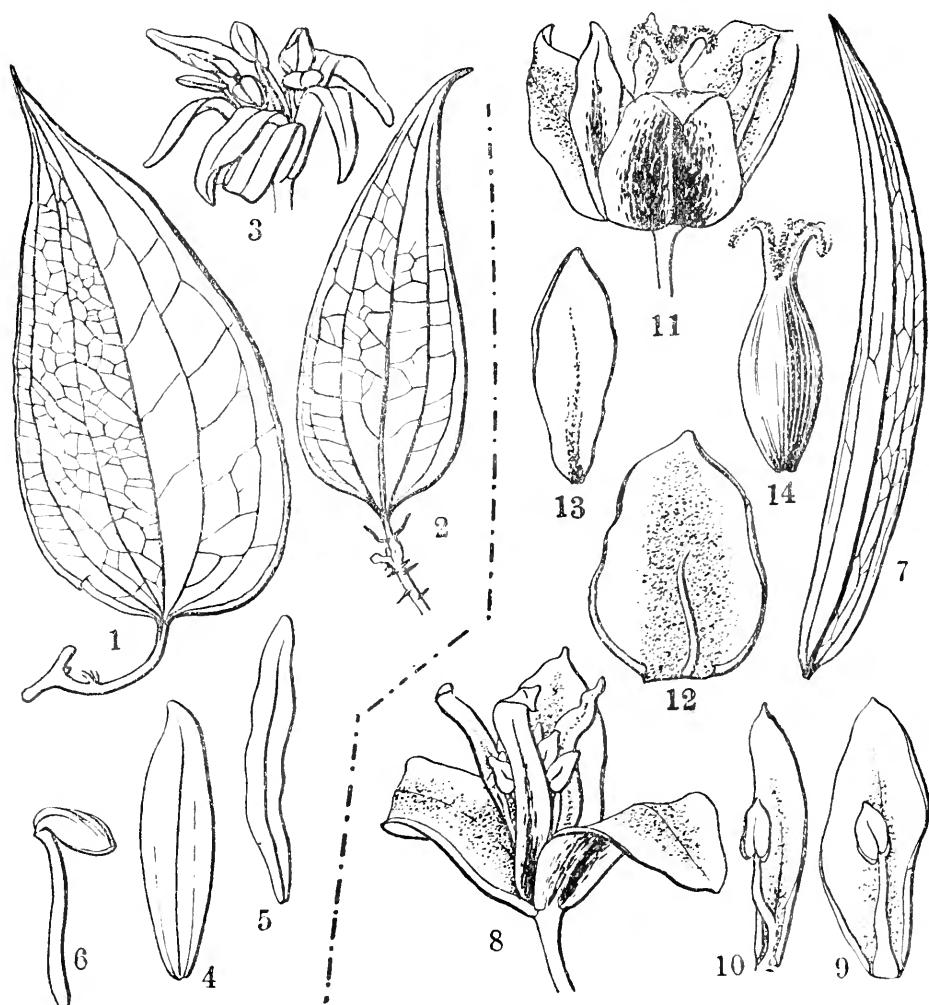


Fig. 43; 1-6, *Smilax formosana* HAYATA; 1, 2, different forms of leaves; 3, a male flower; 4, an outer segment; 5, an inner segment; 6, a stamen; 7-14, *Smilax el ngato-reticulata* HAYATA; 7, a leaf; 8, a male flower; 9, an outer segment of the same flower; 10, an inner segment of the same; 11, a female flower; 12, an outer segment of the same flower; 13, an inner segment of the same; 14, an ovary.

Miq. var. *formosana* HAYATA Mater. Fl. Formos. p. 363. Descriptio aucta: Pedunculi axillares solitarii apice flores umbellatim gerentes 2-2½ cm. longi apice rotundato-plani haud bracteati, pedicellis 7 mm. longis. Perianthii segmenta 6, exteriora 3 oblonge-linearia 4½ mm. longa 1½ mm. lata apice obtusa,

interiora linearia 1 mm. lata apice obtusa. Stamina 6, filamentis 2–2½ mm. longis, antheris obovato-oblongis 1½ mm. longis. Rudimentum ovarii 0.

**Smilax elongato-umbellata** HAYATA (Fig. 44) Mater. Fl. Formos. p.

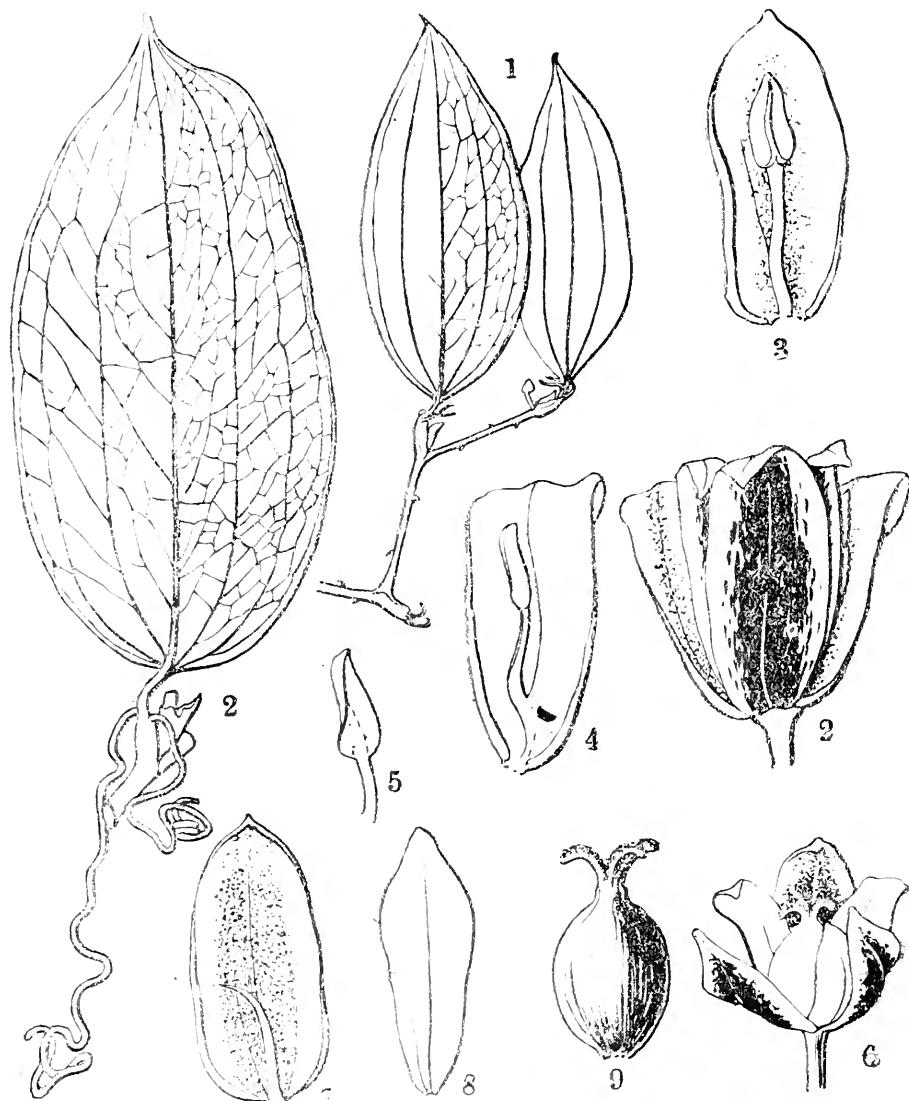


Fig. 44; *Smilax elongato-umbellata* HAYATA: 1, 2, young and adult leaves; 2, a male flower; 3, 4, segments of the same flower; 5, a stamen; 6, a female flower; 7, an outer segment of the female one; 8, an inner segment of the same; 9, an ovary.

358. Descriptio aucta: Folia adulta oblonga 9 cm. longa 4½ cm. lata apice breve acuta vel subito acuminata basi rotundata margine integra coriacea 5-nervia, petiolis 1½ cm. longis a basi usque ad 1 cm. dilatis late alatis, utroque latere cirriferis, cirrhis 7-8 cm. longis. Flores 3 umbellati, pedicellis 6-7 mm. longis basi bracteatis, bracteis triangulari-lanceolatis 1 mm. longis acuminatis. Perianthii segmenta 6, exteriora majora ovato-oblonga 3 mm. longa 2 mm. lata apice obtusissima margine anguste plicata, interiora oblongo-linearia 3 mm. longa 1 mm. lata apice obtusa. Staminodia linearia cum segmentis partim connata. Ovarium conico-ovoideum 1½ mm. longum 1 mm. latum apice obtusum, stigmate sessili 3-partito, partibus linearibus ½ mm. longis deorsum recurvis.

HAB. Hakku, ad 4,000 ped. alt., leg. B. HAYATA, Aprili. 1916; Musha, leg. S. FUJI.

NOTE: Perianth-segments reddish, ovary pale green.

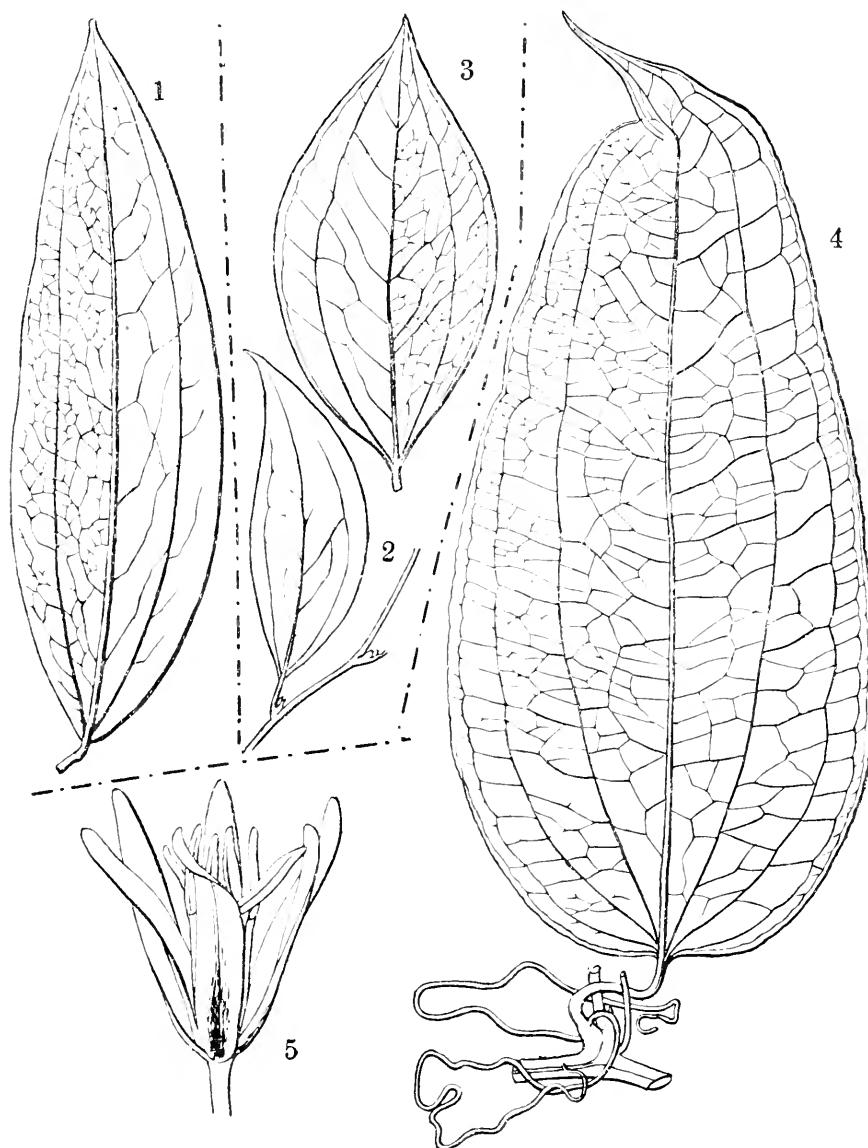
**Smilax gracillima** HAYATA (Fig. 45, 2-3) Mater. Fl. Formos. p. 357; Gen. Ind. p. 85.

**Smilax herbacea** LINN. var. **daibuensis** HAYATA n. v. (Fig. 45, -4). Scandentissima glabra. Folia alterna membranacea vel chartacea ovato-lanceolata vel lanceolata 10-16 cm. longa 2½-6½ cm. lata apice subito acuminata vel caudata ad summum aristis brevibus instructa basi rotunda truncata vel tenuiter cordata margine crenulato-erosa, costis nervis venulisque supra tenuissime subitus prominente elevatis, 5-7-nervia pellucida, petiolis 1-3 cm. longis prope basin utroque latere cirriferis, cirrhis filiformibus 5-7 cm. longis. Flores umbellati, umbellis longe pedunculatis, pedunculis axillaribus 8-10 cm. longis haud vel vix complanatis, pedicellis 2 cm. longis, bracteis scariosis oblongo-triangularibus 1½ mm. longis ¾ mm. latis; apice pedunculi globoso 2½ mm. in diametro. Perianthii segmenta 6, exteriora majora 9 mm. longa 1½ mm. lata, interiora angustiora linearia 1 mm. lata apice obtusa. Stamina 6, filamentis linearibus 5 mm. longis, antheris linearibus 2½ mm. longis ½ mm. latis apice aenatis vel obtusis. Rudimentum ovarii 0.

HAB. Daibusan, leg. MATSUDA (No. 264).

Differs from the type in having ovately lanceolate leaves.

**Smilax horridiramula** HAYATA sp. nov. (Fig. 46). Scandens; caulis



**Fig. 45;** 1, a leaf of *Smilax glabra* ROXB.; 2, 3, different forms of leaves of *Smilax gracillima* HAYATA; 4, a leaf of *Smilax herbacea* var. *daihensis* HAYATA; 5, a flower of the same variety.

teres flexuosus dense spinulosus, spinulis patentissimis gracillimis tenuibus 5 mm. longis, ramosissimus. Folia alterna oblonga vel oblongo-ovata 5½ cm.

longa 3-3½ cm. lata apice obtusissima ad summum breve cuspidata basi rotundata chartacea margine integra 5-nervia utraque pagine glabra, nervis supra minus subtus plus prominente elevatis venis venulisque utraque pagine

tenuissime elevatis, petiolis 1 cm. longis sursum angustis deorsum dilatis, partibus angustis 2 mm. longis, partibus dilatis 7-8 mm. longis alatis apice cirriferis, cirrhis brevissimis 2-3 mm. longis. Flores umbellati, umbellis ad axillas foliorum infinorum ramulorum lateralium solitariis, pedunculis 3 cm. longis complanatis aculeatis. Ramuli laterales basi squamis 2 instructi, squamis oblongo-triangularibus 1-1½ cm. longis apice acutis crassiusculis. Fructus globosus 6 mm. in diametro 2-spermus. Semina purpureorubescens oblonga 3 mm. longa 2½ mm. lata apice truncata plano-convexa.

Fig. 46; *Smilax horridi-ramula* HAYATA.

HAB. Akō : Kasagiyama ; Paiwan ; Takao, leg.

Y. MATSUDA.

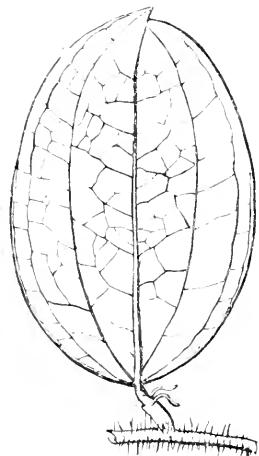
Near *Smilax ferox* WALL.; but differs from it in the branches and branchlets which are densely covered with rather slender long spines.

**Smilax ovato-rotunda** HAYATA sp. nov. (Fig. 48-2). Scendentissima; caulis teres laevis. Folia alterna ovato-rotunda membranacea vel tenuiter coriacea 8-9 cm. longa 6-7 cm. lata apice subito acuta basi rotundata vel tenuiter cordata margine integra 5-7-nervia, nervis venisque supra minus subtus plus elevatis, utraque pagine glabra, petiolis 1-2 cm. longis prope basin cirriferis, cirrhis filiformibus. Pedunculae 2 cm. longae valde complanatae fructus 5-7 umbellatim gerentes, pedicellis 2-2½ cm. longis; apice pedunculi globoso, bracteis triangularibus 1 mm. longis. Baccæ globosa 7-8 mm. in diametro glabra 1-3-sperma. Semina rubescens globosa vel semi-globosa vel triquetro-globosa 4 mm. longa.

*Smilax Oldhami* HAYATA Gen. Ind. p. 86, (non Miq.)

HAB. Arisan : Inter Heishana et Jūjiro, leg. B. HAYATA, Aprili. 1912.

Near *S. Oldhami*; but differs from it in the long scendent branches of much robust habit.



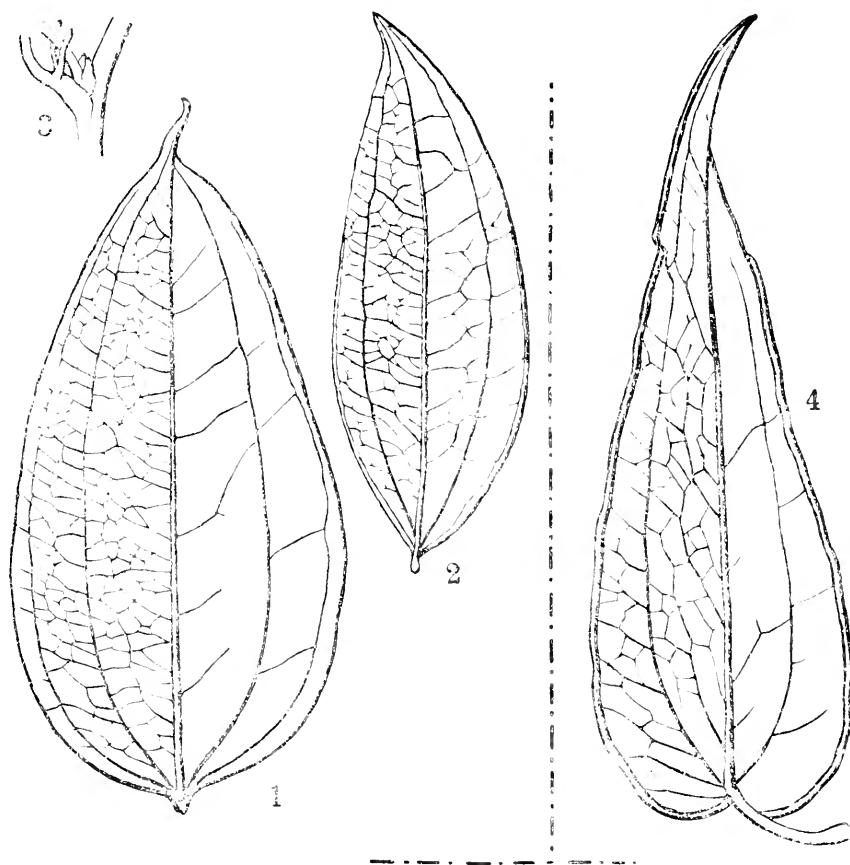


Fig. 47; 1-3. *Smilax lanceaefolia* RONB.; 1, 2, different forms of the leaves; 3, stipules; 4, a leaf of *Smilax nervonarginata* HAYATA.

**Smilax taiheiensis** HAYATA sp. nov. Scandentissima. Folia coriacea oblongo-rotundata 10 cm. longa 7 cm. lata apice cuspido-acuta basi subito acuta ad petiolum abeuntia margine integra 5-nervia, nervis venisque utraque pagine distinete elevatis, utraque pagine glabra, petiolis 2-1½ cm. longis angustissime alatis basi dilatis, partibus dilatis 1-1½ cm. longis alatis apice eirriferis. Flores umbellati, pedunculis axillaribus 2½ cm. longis complanatis, pedicellis 5 mm. longis, bracteis late triangularibus 1 mm. longis. Perianthii segmenta 6, exteriora majora oblonga 4 mm. longa 2 mm. lata apice acuta; interiora 3½ mm. longa 1½ mm. lata apice obtusa. Staminodia 6

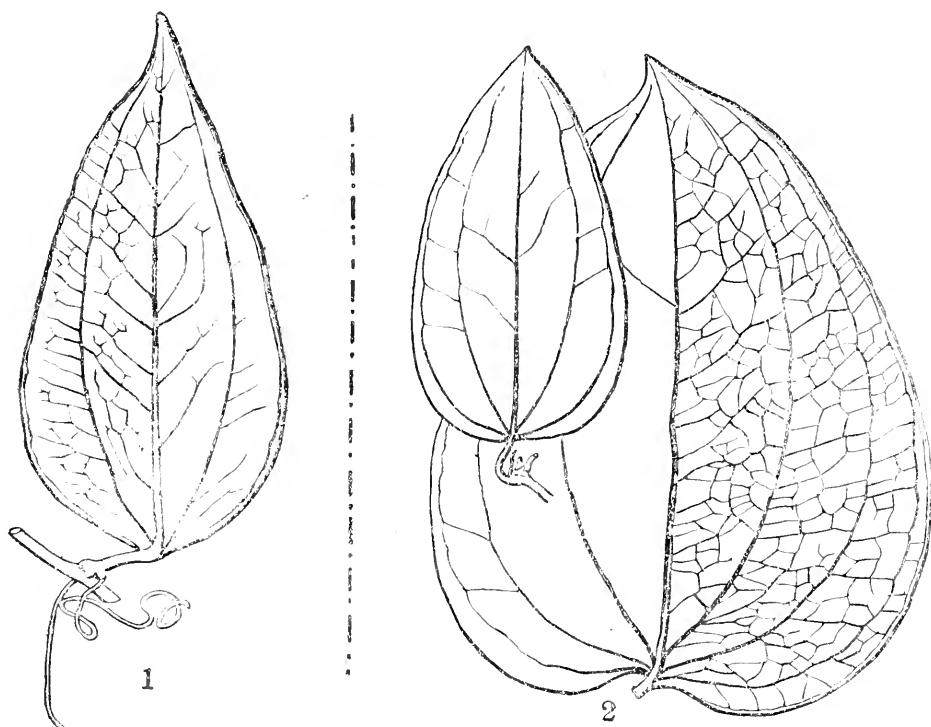


Fig. 48; 1, *Smilax tukiuensis* HAYATA; 2, *Smilax ovato-rotunda* HAYATA.

linearia  $1\frac{1}{2}$  mm. longa. Ovarium ovoideum 2 mm. longum  $1\frac{1}{2}$  mm. latum, stigmate sessili 3-partito, partibus linearibus valde deorsum recurvis  $1\frac{1}{2}$  mm. longis.

HAB. Taiheizan, leg. B. HAYATA et S. SASAKI, Mai. 1917.

Near *S. stenopetala*, but differs from it in the broad winged petioles, in the leaf-blades with much acuter base, and in the simply umbellate flowers. In *S. stenopetala*, umbels are arranged in a cyme.

**Smilax takaoensis** HAYATA sp. nov. Scendentissima; caulis teres scaberulus. Folia alterna elongato-oblongo-ovata chartacea 8–9 cm. longa 3– $3\frac{1}{2}$  cm. lata apice obtusa ad summum breve acuta vel breve caudato-aenata basi obtusa rotundata margine subintegra glabra 5-nervia, nervis venisque utraque paginae tenuissime elevatis, petiolis 1–2 cm. longis prope basin cirriferis, cirris filiformibus 5–7 cm. longis. Pedunculae axillares 5 cm. longae apice flores

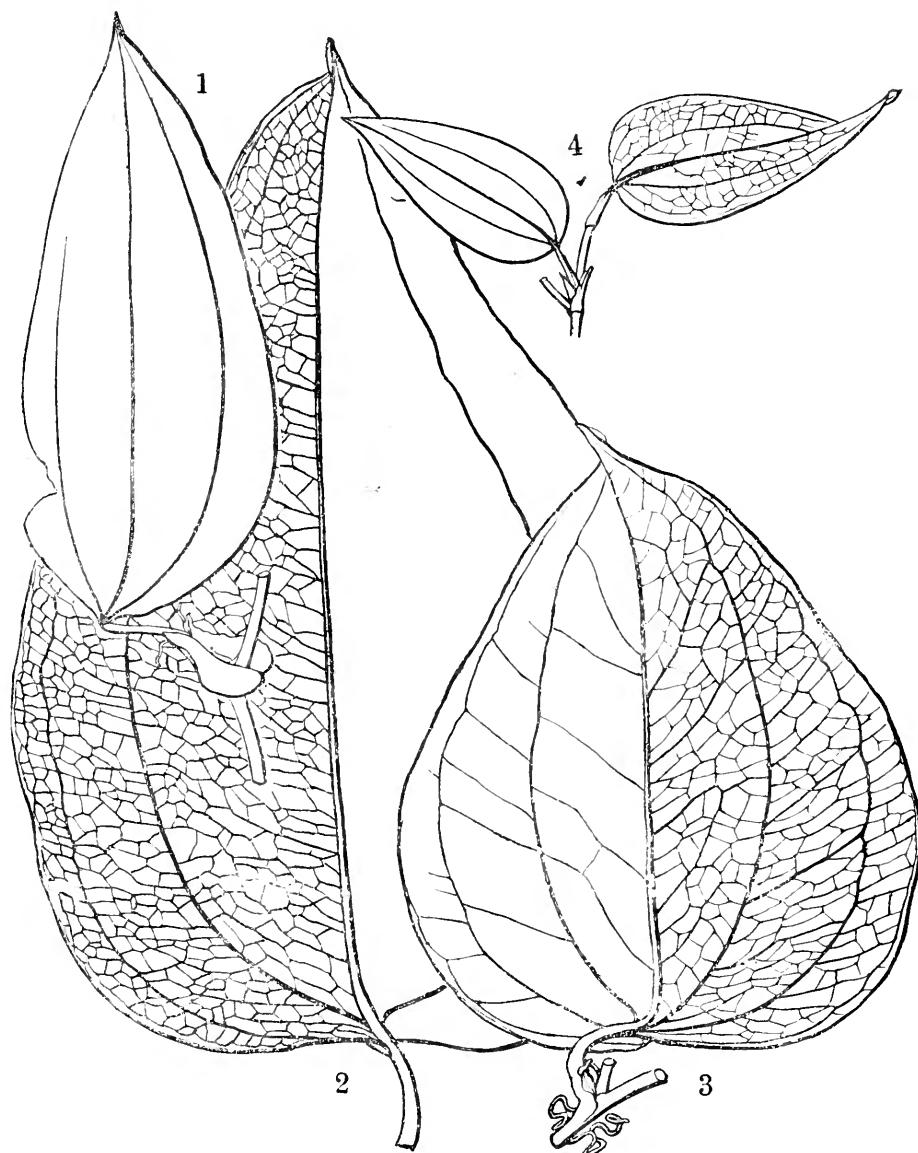


Fig. 49; 1, 2, different forms of *Smilax prolixa* ROXB.; 3, *Smilax planipedunculata* HAYATA; 4, *Smilax randiensis* HAYATA.

umbellatim gerentes, pedicellis  $2\frac{1}{2}$  cm. longis, basi bracteis triangularibus instructis; apice pedunculi globoso. Bacteria globosa. Semina rubescens.

HAB. Takao, leg. U. FAURIE, Januario, 1914, No. 302.

Near *S. glabra* ROXB.; but differs from it in the much longer peduncles and pedicels.

**Smilax tenuissima** HAYATA sp. nov. (Fig. 50,-2.) Caulis erectus vel scandens ramosissimus, ramis ramicisque teretibus glabris laevibus ad locum ramificationis vaginis foliorum persistentibus obtectis gracilibus ascendentibus. Folia alterna oblongo-ovata 3 cm. longa 10-12 mm. lata apice obtusa ad summum breve aristata basi obtusa margine integra 3-nervia, costis venisque utraque pagine tenuissime elevatis, petiolis 1 cm. longis haud cirriferis basi dilatis vaginiformibus caulem amplectantibus. Pedunculae axillares  $1\frac{1}{2}$  cm. longae fructus 2-3 umbellatim gerentes, pedicellis 5 mm. longis basi bracteatis, bracteis ovato-linearibus 3 mm. longis  $\frac{1}{2}$  mm. latis acuminatis. Baccæ late globosa 5 mm. lata 4 mm. longa. Semina .....

HAB. Mt. Morrison, ad 7,000 ped. alt., leg. S. SASAKI, Oct. 1919.

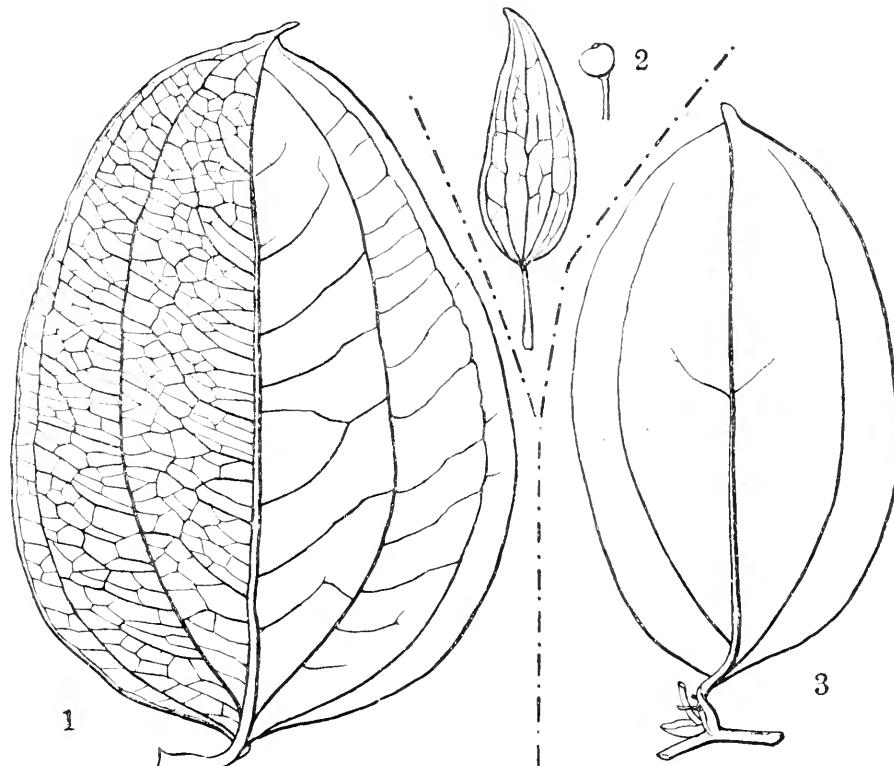


Fig. 50; 1, *Smilax stenopetala* A. GR.; 2, *Smilax tenuissima* HAYATA; 3, *Smilax trachyclada* HAYATA.

Near *S. gracillima* HAYATA; but differs from it in the vaginate leaf base.

**Smilax trachyclada** HAYATA sp. nov. (Fig. 50,-3.) Scandentissima; aculeatus scaberrimus, aculeis triangularibus 2-3 mm. longis, ramosissimus. Folia oblongo-ovata 8-10 cm. longa 5-6 cm. lata obtusissima fere rotundata ad summum breve apiculata, apiculis 3 mm. longis, basi rotundata margine integra chartacea 5-nervia, nervis venulis supra minus subtus plus elevatis, petiolis 1-1½ cm. longis basi dilatis, partibus dilatis 5 mm. longis apice cirriferis, cirthis brevioribus 5 mm. longis. Cymæ axillares solitariae, pedunculis 2 cm. longis dichotome et cymose ramosis, ramis divaricatis apice flores 20-30 umbellatim gerentibus, pedicellis 7 mm. longis. Perianthii segmenta 6, exteriora linearia 6 mm. longa 1½ mm. lata apice obtusa, interiora angustiora linearia 6 mm. longa ¾ mm. lata apice obtusa. Stamina 6, filamentis filiformibus 7 mm. longis, antheris oblongo-linearibus 1½ mm. longis apice obtusissimis.

HAB. Arisan, ad 2,500 m. alt., leg. B. HAYATA, typus; Mt. Chōran; Bangui; Tōseikaku.

Near *S. stenopetala*; but differs from it in the very much scabrous verrucose branchlets.

### ***Heterosmilax* KUNTH.**

***Heterosmilax raishaensis*** HAYATA sp. nov. (Fig. 51). Suffruticosa, scandentissima; caules et rami graciles angulato-teretes multi-sulcati muricato-regosi. Folia alterna membranaceo-chartacea vel membranacea ovato-oblonga 12 cm. longa 5½ cm. lata apice acuminata basi rotundata ad extremitatem basilarem acuta integra utraque pagina glabra 5-7-nervia, petiolis 2-3 cm. longis basi dilatis, partibus dilatis 7 mm. longis apice utroque latere cirriferis, cirthis filiformibus 5-10 cm. longis. Flores umbellatim dispositi, umbellis 20-40 floratis longe pedunculatis, pedunculis 5-6 cm. longis complanatis apice globoso dilatis bracteis bracteolisque florum dense obtectis, bracteis ovatis 1½ mm. longis castaneis, pedicellis florum gracilibus 2½ cm. longis glabris. Perianthium gamophyllum clavato-cylindricum 5 mm. longum 2 mm. latum glabrum apice clausum 3-dentatum, dentibus obtusis minutis ½ mm. latis ¼ mm. longis. Stamina 3, filamentis valde complanatis 2½ mm. longis ½ mm. latis glabris basi usque ad medium connatis, antheris rotundatis ½ mm. in diametro



Fig. 51; *Heterosmilax raishiana* HAYATA; 1, a branch; 2, a flower; 3, the same, in vertical section; 4, 5, a stamen, seen from different sides.

apice apiculatis.

HAB. Raisha, leg. Y. MATSUDA.

Near *Heterosmilax arisanensis* HAY., but differs from it in the much more

slender pedicels and in the leaves which are rounded at the base and at the same time always acutely attenuate to the petioles. In *H. arisanensis* the leaves are cordate or rounded at the base but not attenuate to the petioles.

***Polygonatum* ADANS.**

***Polygonatum arisanense*** HAYATA sp. nov. Caulis glaber altissimus circ. 100 cm. longus a medio sursum foliatus. Folia alterna lanceolata inferiora majora 20 cm. longa 4½ cm. lata apice acuminata basi obtusa ad petiolum 2-3 mm. longum contracta integra membranacea utraque glaberrima subtus plus minus glauca. Flores 2-4 umbellatim dispositi, umbellis axillaribus, pedunculis 1-2 cm. longis gracilibus nutantibus, pedicellis 1½ cm. longis apice ad locos infra calycem 1 mm. distantes articulatis. Perianthium cylindricum 2 cm. longum 6 mm. latum glabrum apice 6-lobatum, lobis triangularibus 5 mm. longis 3½ mm. latis apice acutis basi haud contractis. Stamina 6 medio perianthii affixa, filamentis 5 mm. longis, antheris elongato-oblongis 2 mm. longis 1 mm. latis apice apiculatis basi plus minus 2-lobatis. Ovarium ellipsoideum 5½ mm. longum 3 mm. latum glabrum, stylo filiformi 13 mm. longo glabro, stigmate truncato plus minus dilato.

HAB. Arisan: Kōdenshō, leg. S. SASAKI, Mai. 1913; Bunkiko, ad 1,500 m. alt.

Near *Polygonatum officinale*, but differs from it in having much longer and thinner leaves.

***Polygonatum officinale*** ALL. var. ***formosanum*** HAYATA n. v. Caulis glaber 80-100 cm. longus ad medio sursum foliatus. Folia alterna elongato-oblonga inferiora majora circ. 10 cm. longa 4 cm. lata apice acuta ad summum obtusa ad petiolum 3-5 mm. longum contracta integra chartacea. Flores 2-4-umbellatim dispositi, umbellis axillaribus solitariis, pedunculis 1½ cm. longis, pedicellis 1½ cm. longis, infra apicem articulatis. Perianthium cylindricocampanulatum 2 cm. longum 8 mm. latum apice 6-lobatum, lobis late triangulari-rotundatis 6 mm. longis 5 mm. latis apice obtusissimis basi plus minus contractis glabris. Stamina 6 ad medium tubi perianthii affixa, filamentis 6 mm. longis glabris, antheris oblongo-linearibus 3 mm. longis 1 mm. latis apice obtusis basi rotundatis. Ovarium ovoido-fusiforme 5 mm. longum 2 mm. latum

glabrum, stylo 12 mm. longo filiformi, stigmate punctiformi.

HAB. Shichiseizan, Tikushizan, Taitonzan.

*Polygonatum officinale* ALL. var. *Maximowiczii* HAYATA Gen. Ind. p. 85, (non FR. et SAV.)

Differs from *P. officinale* var. *Maximowiczii* FR. et SAV. in having much smaller leaves.

### *Smilacina* DESV.

**Smilacina formosana** HAYATA sp. nov. Rhizoma repens. Caulis erectus 20–30 cm. Iongus simplex teres sursum plus minus recurvus sursum tenuiter hirsutus deorsum glaber. Folia secus caulem a medio sursum alternatim dispositæ ovato-oblonga vel oblonga 10 cm. longa 4–5 cm. lata apice acuta vel acuminata ad summum obtusa basi obtusa ad petiolum contracta supra subglabra vel tenuiter hirsuta subtus glabra, petiolis nullis vel usque ad 1½ em. longis 3–4 mm. latis. Panicula terminalis solitaria 5 cm. longa 4 cm. lata breve hirsuta, pedunculis 4 cm. longis, pedicellis 2 mm. longis hirsutis, bracteis triangularibus 1 mm. longis. Segmenta perianthii 6 patentia basi plus minus connata obovato-linearia vel oblonga 3 mm. longa 1½ mm. lata apice obtusa basi plus minus contracta glabra. Stamina 6, filamentis basi cum segmentis perianthii connatis 1½ mm. longis, antheris cordato-reniformibus ½ mm. longis. Ovarium ovoidem 1½ mm. longum totiusque latum glabrum tenuiter 3-lobatum, stylo ¼ mm. longo apice stigmatoso, stigmate 3-lobato. Bæea in exsiccato rubescens, rotundata 3-lobata 6 mm. in diametro 3-sperma.

*Smilacina japonica* HAYATA Gen. Ind. p. 85, (non A. GR.)

HAB. Mt. Morrison, Mt. Arisan, Mt. Gōkwanzan.

Near *S. japonica*, but differs from it in the rounded anthers and in the shortly hirsute inflorescence.

### *Paris* LINN.

**Paris arisanensis** HAYATA sp. nov. Rhizoma crassum repens teres 1 cm. in diametro; caulis erectus basi squamis 2–3 vaginiformibus instructus ex apice rhizomatis oriundus solitarius rectus 30–40 cm. longus glaberrimus apice foliis verticillatis instructus teres. Folia ad apicem caulis verticillatum 8 disposita

lanceolata vel ob lanceolata apice acuminata basi obtusa attenuata integra membranacea, petiolis 5 mm. longis. Flores solitarii terminales, pedunculis erectis rectis 7 cm. longis. Sepala 4-5-6 lanceolata 4-4½ cm. longa 5-10 mm lata apice acuminata basi obtusa vel cuneata margine integra herbacea membranacea. Petala 4-5-6, lineari-filiformia 5½ cm. longa ½-¾ mm. lata sepallo longiora potentia. Stamina 8-12, filamentis glabris 4-5 mm. longis filiformibus, antheris linearibus 7 mm. longis ½ mm. latis 2-loocularibus apicinatis adnatis. Ovarium pentagono-globosum plus minus depresso 5 mm. longum 7 mm. latum, stylo 5-partito, partibus linearibus 4 mm. longis.

*Paris polyphylla* HAYATA Gen. Ind. P. 85, (non SMITH.)

HAB. Ushikō, leg. B. HAYATA, Aprili. 1916, (typus!); Inter Heishana et Nimaudaira, leg. B. HAYATA, Mart. 1912.

Near *Paris polyphylla*, but distinguishable from it in the much thinner and narrower leaves and in the much longer linear petals.

NOTE: Sepals green; petals yellowish green; ovary reddish at the top.

### *Metanarthecium* MAXIM.

*Metanarthecium formosanum* HAYATA sp. nov. Perennis. Folia omnia radicalia lineari-lanceolata 13-15 cm. longa 9 mm. lata apice acuminata basi gradatim angustata glabra integra membranacea. Scapi 20-50 cm. longi erecti recti e centro fasciculi foliorum radicalium oriundi apice spiciformes, partibus spiciformibus viscosis 3-5 cm. longis, bracteis linearibus 5-10 mm. longis 1 mm. latis apice obtusis, pedicellis brevissimis 1-½ mm. longis. Calyx tubulosus-campanulatus 4 mm. longus 3 mm. latus basi latere superiore gibbosus glaber apice 6-lobatus, lobis oblongo-triangulibus 1½ mm. longis 1 mm. latis apice obtusis basi leviter vel vix contractis; calycis tubus usque ad medium cum ovario connatus. Stamina 6 ore tubi calycis affixa, filamentis brevissimis, antheris subsessilibus ovato-oblongis ½ mm. longis. Ovarium glabrum sensu inferioris, parte libera trigono-conicum 1 mm. longa apice acuta ad stylum ½ mm. longum altemiti, stylo triquetro apice 3-lobato.

*Aletris formosana* HAYATA.

*Metanarthecium foliatum* HAYATA Fl. Mont. Formos. p. 226, (non MAXIM.)

HAB. In Monte Morrison; Monte Renduisan.

Near *M. foliatum* MAXIM.; but differs from it in having much narrower leaves. In examining the flowers of *Metanarthecium* und *Aletris*, I have found no distinction between the two genera regarding the generic characters, as pointed out by Mr. Y. KUDŌ some years ago.

*Aspidistra* KER.

*Aspidistra attenuata* HAYATA (Fig. 52) Ic. Pl. Formos. II. p. 145.

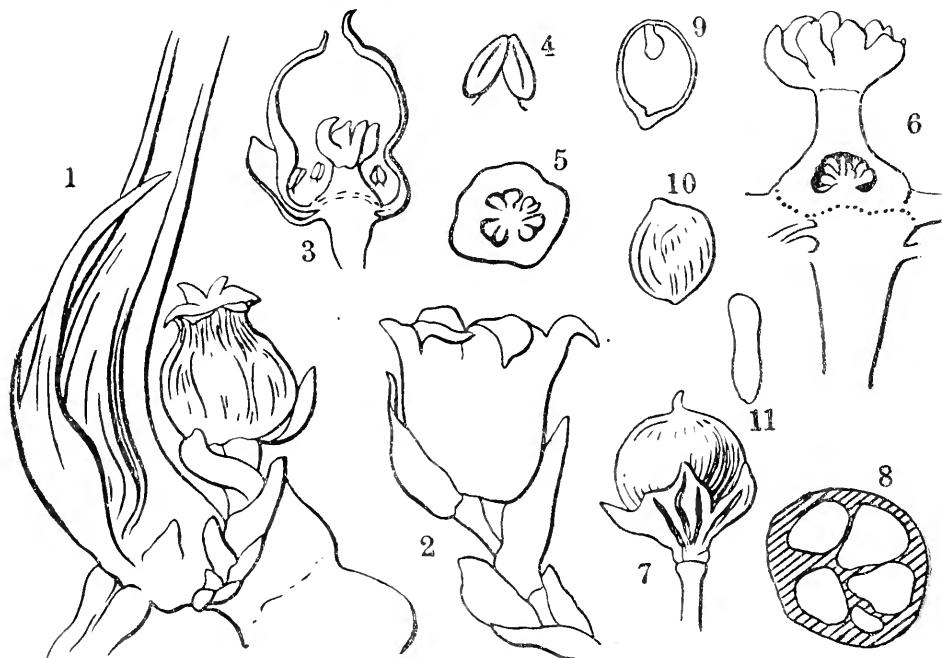


Fig. 52.; *Aspidistra attenuata* HAYATA; 1, basal portion of the plant; 2, a flower; 3, the same, in vertical section; 4, a stamen; 5, cross-section of an ovary; 6, vertical section of a pistil; 7, a fruit; 8, cross section of a fruit; 9, a seed; 10, vertical section of the same, embryo seen; 11, an embryo.

*Aspidistra daibuensis* HAYATA sp. nov. Rhizoma repens squamis dense obtectum. Folia secus rhizoma disposita lanceolata 45 cm. longa  $6\frac{1}{2}$  cm. latè apice acuminata vel acuta basi gradatim attenuata chartacea, petiolis 10 cm. longis. Flores secus rhizomata solitariter dispositi, pedunculis 2-3 cm. longis, bracteis 4-5 instructis, bracteis ovatis sericeis apice obtusis vel emarginatis. Perianthium urceolato-campanulatum 2 cm. longum a medio sursum 8-lobatum, lobis anguste triangularibus 1 cm. longis basi 5 mm. longis acuminatis cras-

siusculis intus medio 2-carinatis, carinis 2 mm. latis crassiusculis. Stamina 8, antheris sessilibus tuto perianthii toto adnatis ovatis  $2\frac{1}{2}$  mm. longis  $1\frac{1}{2}$  mm. latis apice acutis. Ovaria stigmataque ignota.

HAB. Daibusan, leg. Y. MATSUDA, Jan. 1917.

Near *Aspidistra mushænsis* HAYATA, but differs from it in the distinctly carinate lobes of the perianth of the much thicker texture.

**Aspidistra mushænsis** HAYATA sp. nov. Rhizoma repens teres 6 mm. in diametro rhizomatis squamis obtectum. Folia secus rhizomata disposita lineariorblanceolata 40 cm. longa 5 cm. lata apice acuta vel acuminata, petiolis 20 cm. longis. Flores rhizomate oriundi solitarii, pedunculis 2 cm. longis basi bracteatis, bracteis scariosis ovato-triangularibus apice acutis vel obtusis multi-seriatim dispositis basin floris amplectantibus. Perianthium albo-roseum late campanulibracteatis, latum 1 cm. longum 2 cm. latum medio sursum lobatum, lobis 8 triangularilanceolatis 7–8 mm. longis basi 3 mm. latis acuminatis margine duplicato-plicatis intus secus longitudinem carinatis, intus glabrum. Stamina 8, antheris sessilibus ovatis 2 mm. longis  $1\frac{1}{2}$  mm. latis. Ovarium cylindricum 3 mm. longum 2 mm. latum apice ad stigma expansum, stigmate peltato 6 mm. in diametro valde alteque plicato undulato.

HAB. Musha, ad 3,000 ped. alt., leg. B. HAYATA, Aprili. 1916.

Near *Aspidistra attenuata* HAY.; but distinguishable from it in the much smaller flowers and leaves and especially in the campanulate perianth.

### *Lilium* LINN.

**Lilium speciosum** THUNB.; HAYATA Gen. Ind. p. 85.

*Lilium Konishii* HAYATA Gen. Ind. p. 85.

### *Heloniopsis* A. GR.

**Heloniopsis acutifolia** HAYATA sp. nov. (Fig. 53). Rhizoma crassum suberectum. Folia omnia radicalia oblanceolata 10 cm. longa  $1\frac{1}{2}$ –2 cm. lata apice acuta ad summum aristis minutis instructa basi longe attenuata usque ad 4 mm. latitudinem abeuntia integra membranacea. Scapi circ. 15 cm. longi erecti recti basi foliis minoribus sursum squamis instructi apice flores 3–5 umbellatim gerentes, pedicellis  $1\frac{1}{2}$  em. longis. Segmenta perianthii 6 linearis-



Fig. 53; *Heloniopsis acutifolia* HAYATA; 1, the plant; 2, a flower; 3, 4, segments of the perianth; 5, a stamen, seen from different sides; 6, an apical portion of the style; 7, cross-section of an ovary.

lanceolato-spathulata 12 mm. longa 4 mm. lata apice obtusissima basi attenuata. Stamina 6 basi segmentorum affixa, filamentis 1 cm. longis filiformibus glabris, antheris linearibus 3 mm. longis 1 mm. latis apice obtusis basi alte 2-lobatis. Ovarium trianguli-obconicum vel obcordatum 6 mm. longum totiusque latum, stylo 15 mm. longo apice capitato peltato rotundato 1½ mm. in diametro.

HAB. Bonbonzun, leg. B. HAYATA et S. SASAKI, Mai. 1917.

Near *Heloniopsis umbellata*, but differs from it in the leaves which are triangularly acute and in the much longer anthers.

## Aroideæ.

### *Arisæma* MART.

***Arisæma quinquefoliola*** HAYATA sp. nov. (Pl. VII). Caulis cum spadice 40–50 cm. longus basi vaginatus glaber 2-foliatus. Folia dva alterna cum spadice aequilonga pedatim 5-foliolata, foliolo terminali ovato-lanceolato 11–14 cm. longo 3–3½ cm. lato apice aento subito longe caudato ad summum arista instructo basi aento obtuso margine subintegro vel eroso glabro tenuiter membranaceo, petiolulo centrali 2½ cm. longo glabro, foliolis lateralibus plus minus minoribus conformibus basi plus minus obliquis, petiolulis brevioribus; petiolis communibus 10–12 cm. longis glabris basi auriculis vaginarum instructis. Spatha cylindrica 8 cm. longa 13 mm. lata glabra, lamina oblonga apice trianguli-acuta vel acuminata medio subito refracto-recurva. Spadix gracilis 7 cm. longus basi deorsum staminifer, partibus staminiferis 2½ cm. longis; partibus superioribus gracillimus glabris apice breve penicillatis. Stamina secus partem inferiorem spadicis conspersa, filamentis ½ mm. longis; loculis antherarum 3–7 secus filamentum spicatum dispositis vel ad apicem filamentorum aggregatis.

HAB. Akō, Kuwarsu, leg. Y. MATSUDA, Jan. 1918; Daibusan, Jan. 1916.

Remarkable for its pedately 5-foliolate leaves.

**Arisæma ringens** THUNB. (Fig. 54); HAYATA Gen. Ind. p. 88.  
HAB. Kelung, B. HAYATA, Mart. 1916.

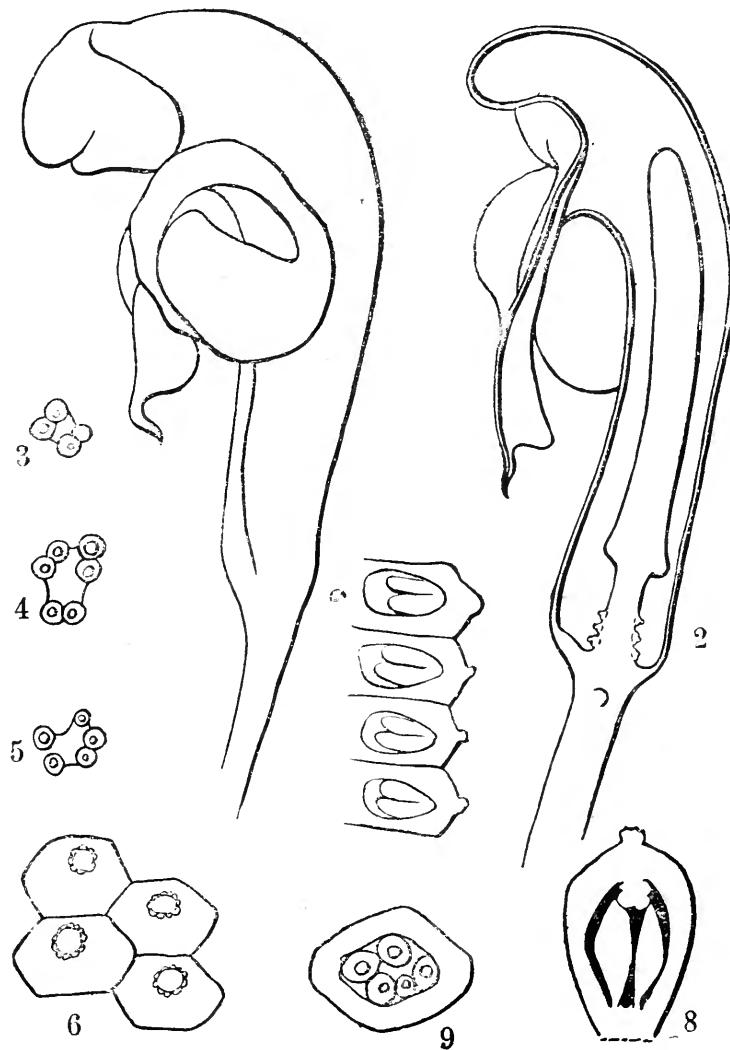


Fig. 54; *Arisæma ringens* THUNB.; 1, a spathe; 2, vertical section of the same; 3, 4, 5, stamens; 6, ovaries; 7, vertical section of the same ovaries; 8, vertical section of an ovary; 9, cross-section of the same.

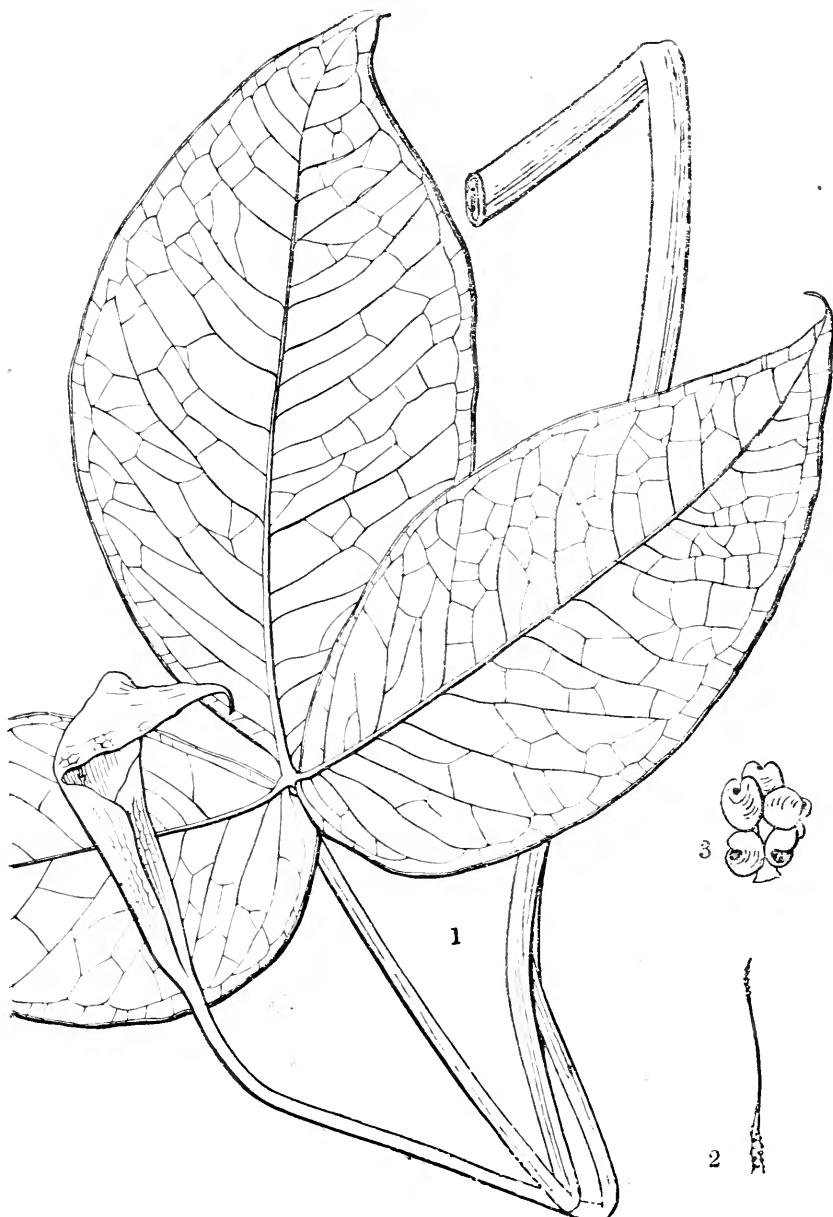


Fig. 55; *Arisema Matsudai* HAYATA; 1, the plant; 2, a male spadix; 3, a stamen.

**Arisæma Matsudai** HAYATA sp. nov. (Fig. 55). Caulis cum spadice 35–40 cm. longus glaber erectus 1-foliatus. Folia cum spatha æquilonga longe petiolata 3-foliolata, foliolis tenuiter membranaceis, foliolo terminali ovato-oblongo 13 cm. longo 5–6 cm. lato apice acuto ad summum aristato basi acuto vel obtuso margine integro pinninervio, venulis minute reticulatis, subsessili, foliolis lateralibus cum terminali conformibus sed basi obliquis plus minus rotundatis sessilibus, petiolis 10–15 em. longis deorsum ad vaginam abeuntibus; folia toto glaberrima. Spatha cylindrica cum lamina 7–8 cm. longa, partibus cylindricis 3 em. longis 1 em. latis, laminis medio subito refracto-recurvis 3 em. longis 1½ em. latis apice aristato-acuminatis toto glabris. Spadix ♂ gracilis 4 em. longus basi staminifer, partibus staminiferis 1½ em. longis, (staminibus 2-locularibus, loculis globosis) partibus superioribus filiformibus 2½ em. longis aculeis mollis obtusis instructis.

HAB. Kuwansu, leg. Y. MATSUDA, April. 1917, (T. 645).

Near *A. grapsospadix* HAY.; but, differs from it in the nearly sessile leaflets.

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" <i>alboviride</i> HAYATA	108	" <i>formosala</i> HAYATA	103
<b>Dentella</b> FOUST.	53	" <i>garatliensis</i> HAYATA	103
" <i>Matsudai</i> HAYATA	53	" <i>lunifusa</i> HAYATA	104
<b>Derris taiwaniana</b> MATSUM.	23	" <i>hyperifolia</i> HAYATA	104
<b>Desmodium</b> DESV.	23	" <i>Iuhkuensi</i> HAYATA	103
" <i>akoense</i> HAYATA	23	" <i>orientalis</i> HAYATA	104
" <i>formosanum</i> HAYATA	26	" <i>Peplus</i> LINN.	103
" <i>Slimadai</i> HAYATA	24	" <i>Tashiroi</i> HAYATA	104
<b>DIAPENSIACEÆ</b>	66	<b>Eurya</b> THUNB.	5
<b>Dicliptera</b> Juss.	85	" <i>leptophylla</i> HAYATA	5
" <i>uraiensis</i> HAYATA	85	" <i>Matsudai</i> HAYATA	6
<b>DILLENIACEÆ</b>	7	<b>Filipendula</b> LINN.	39
<b>Diplospora</b> DC.	59	" <i>Kiraishiensis</i> HAYATA	39
" <i>baisanensis</i> HAYATA	59	<b>Galactia</b> P. BR.	30
<b>Dolichos</b> LINN.	37	" <i>lanceolata</i> HAYATA	30
" <i>Lablab</i> LINN. var. <i>dolichocarpa</i>		<b>Galeola</b> LOUR.	114
HAYATA	37	" <i>Matsudai</i> HAYATA	114
<b>Dolichovigna</b> HAYATA	35	<b>Galium</b> LINN.	65
" <i>formosana</i> HAYATA	35	" <i>trifidum</i> MICHX.	65
" <i>rhombifolia</i> HAYATA	36	<b>Gardneria</b> WALL.	75

<i>Gardneria hongkongensis</i> HAYATA	75	<i>Ixora graciliflora</i> HAYATA	61
<i>Gastrochilus</i> DON.	116	<i>Jasminum</i> LINN.	70
", <i>Matsudai</i> HAYATA	116	", <i>Shimadai</i> HAYATA	70
<i>Glochidion</i> FORST.	94	<i>Kadsura</i> JUSS.	4
", <i>Arnottianum</i> MUELL. ARG.	94	", <i>Matsudai</i> HAYATA	4
", <i>bicolor</i> HAYATA	95	<i>LABIAT.E.</i>	86
", <i>chademenosocarpum</i> HAYATA	94	<i>Lasianthus</i> JACK.	62
", <i>eriocarpum</i> CHAMP.	95	", <i>hiiranensis</i> HAYATA	62
", <i>Fortunei</i> HANCE	95	", <i>microstachys</i> HAYATA	63
", <i>hirsutum</i> HAYATA	94	", <i>parvifolius</i> HAYATA	63
", <i>Longkongense</i> MUELL. ARG.	95	<i>LEGUMINOS.E.</i>	18
", <i>hypoleueum</i> HAYATA	95	<i>LILIACE.E.</i>	124
", <i>kotoense</i> HAYATA	96	<i>Lilium</i> LINN.	144
", <i>kusukusense</i> HAYATA	96	", <i>Konishii</i> HAYATA	144
", <i>sphaerostigmum</i> HAYATA	96	", <i>speciosum</i> THUNB.	144
", <i>suishrense</i> HAYATA	97	<i>Limnophila stipitata</i> HAYATA	77
", <i>zeylanicum</i> HAYATA	95	<i>Lindernia</i> ALL.	77
<i>Glycine</i> LINN.	26	", <i>cruciformis</i> HAYATA	78
", <i>pescadrensis</i> HAYATA	26	", <i>stellariifolia</i> HAYATA	79
", <i>subonensis</i> HAYATA	27	<i>Lithocarpus</i> BLUME	106
", <i>tabacina</i> BENTH.	29	", <i>Ma'sudai</i> HAYATA	108
", <i>tomentella</i> HAYATA	29	", <i>Nakaii</i> HAYATA	106
", <i>tomentosa</i> HAYATA	29	<i>LOGANIACE.E.</i>	95
<i>Hedysotis</i> LINN.	53	<i>Lonicera</i> LINN.	47
", <i>kuraruensis</i> HAYATA	53	", <i>japonica</i> HAYATA	47
<i>Helicia</i> LOUR.	87	", <i>japonica</i> THUNB. var. <i>semper-</i>	
", <i>hainanensis</i> HAYATA	87	<i>villosa</i> HAYATA	47
<i>Heloniopsis</i> A. GR.	144	", <i>oiwakensis</i> HAYATA	47
", <i>acutifolia</i> HAYATA	144	", <i>rubropunctata</i> HAYATA	48
<i>Heterosmilax</i> KUNTIL.	138	", <i>shintenensis</i> HAYATA	48
", <i>raishaensis</i> HAYATA	138	<i>Macaranga</i> THOUARS.	99
<i>Hygrophila</i> R. BR.	81	", <i>Henricorum</i> HEMSL.	99
", <i>pogonocalyx</i> HAYATA	81	<i>MAGNOLIACE.E.</i>	1
<i>Illicium</i> LINN.	1	<i>Mahonia</i> NUTT.	5
", <i>anisatum</i> HAYATA	3	", <i>lomariifolia</i> TAKEDA	5
", <i>anisatum</i> L. var. <i>leucanthum</i>		", <i>morrisonensis</i> TAKEDA	5
HAYATA	2	<i>Mallotus</i> LOUR.	99
", <i>arborescens</i> HAYATA	1	", <i>ricinooides</i> MUELL. ARG.	99
", <i>leucanthum</i> HAYATA	2	<i>Metanarthecium</i> MAXIM.	142
", <i>randaiense</i> HAYATA	2	", <i>foliatum</i> HAYATA	142
<i>Illysanthes aristito-serrata</i> HAYATA	80	", <i>formosanum</i> HAYATA	142
<i>Indigofera</i> LINN.	19	<i>Millettia</i> W. et ARN.	22
", <i>formosana</i> MATSUMURA	19	", <i>pachycarpa</i> HAYATA	23
", <i>macrostachya</i> HAYATA (ron		", <i>taiwaniana</i> (MATSUM.)	22
VENT)	19	<i>Mimulus</i> LINN.	77
", <i>mansuensis</i> HAYATA	19	", <i>formosana</i> HAYATA	79
", <i>venulosa</i> CHAMP. var. <i>glaucia</i>		<i>Morus</i> LINN.	105
HAYATA	20	", <i>acidosa</i> GRIFFITH	105
<i>Ixora</i> LINN.	61	", <i>alba</i> HAYATA	105

<b>Mussænda</b> LINN.	.. .. .. .. ..	56		Polygonatum	arisanense HAYATA	.. .. ..	140
"    albiflora	.. .. .. .. ..	56		"    officinale ALL. var. formo-			
<b>Nauclea</b> LINN.	.. .. .. .. ..	50		sanum HAYATA	.. .. ..	140	
"    formosana MATSUM.	.. .. .. .. ..	49		"    officinale ALL. var. <i>Maxim-</i>			
"    taiwaniana HAYATA	.. .. .. .. ..	51		<i>owiczii</i> HAYATA	.. .. ..	141	
"    truncata HAYATA	.. .. .. .. ..	50		<i>Pongamia ticaniana</i> HAYATA	.. .. ..	28	
<b>Ocimum</b> LINN.	.. .. .. .. ..	83		<b>PROTEACEÆ.</b>	.. .. .. .. ..	87	
"    Tashiroi HAYATA	.. .. .. .. ..	86		<b>Pseudosmilax</b> HAYATA	.. .. .. .. ..	126	
<b>Oldenlandia</b> LINN.	.. .. .. .. ..	54		"    hogoensis HAYATA	.. .. ..	125	
"    diffusa ROXB.	.. .. .. .. ..	54		"    seisuiensis HAYATA	.. .. ..	125	
<b>OLEACEÆ.</b>	.. .. .. .. ..	70		<b>Psychotria</b> LINN.	.. .. .. .. ..	62	
<b>Ophiorrhiza</b> LINN.	.. .. .. .. ..	56		"    kotoensis HAYATA	.. .. ..	62	
"    dimorphantha HAYATA	.. .. .. .. ..	56		"    macrophylla HAYATA	.. .. ..	62	
"    inflata MAXIM.	.. .. .. .. ..	56		<b>Pueraria</b> DC.	.. .. .. .. ..	31	
"    monticola HAYATA	.. .. .. .. ..	56		"    phaseoloides BENTH.	.. .. ..	31	
"    parviflora HAYATA	.. .. .. .. ..	56		<b>Randia</b> LINN.	.. .. .. .. ..	59	
"    stenophylla HAYATA	.. .. .. .. ..	56		"    densiflora HAYATA	.. .. ..	59	
<b>ORCHIDÆE.</b>	.. .. .. .. ..	108		"    sinensis ROEM.	.. .. ..	59	
<b>Orchis</b> LINN.	.. .. .. .. ..	116		"    suishensis HAYATA	.. .. ..	59	
"    kirishimensis HAYATA	.. .. .. .. ..	116		<b>RANUNCULACEÆ.</b>	.. .. .. .. ..	1	
<b>Osmanthus</b> LOUR.	.. .. .. .. ..	71		<b>Reevesia</b> LINDL.	.. .. .. .. ..	8	
"    bibraetentus HAYATA	.. .. .. .. ..	71		"    formosana HAYATA	.. .. ..	8	
"    daibuensis HAYATA	.. .. .. .. ..	72		<b>Rhododendron</b> LINN.	.. .. .. .. ..	65	
"    gamostromus HAYATA	.. .. .. .. ..	74		"    formosanum HEMSL.	.. .. ..	65	
"    Matsudai HAYATA	.. .. .. .. ..	75		"    nankotaisanense HAYATA.	.. .. ..	66	
<b>Otterodendron</b> <i>Matsudii</i> HAYATA	.. .. .. .. ..	18		<b>ROSACEÆ.</b>	.. .. .. .. ..	38	
<b>Ouropuria</b> <i>formosana</i> HAYATA	.. .. .. .. ..	49		<b>RUBIACEÆ.</b>	.. .. .. .. ..	49	
"    uralensis HAYATA	.. .. .. .. ..	50		<b>Rungia</b> NEES.	.. .. .. .. ..	85	
<b>Pæderia</b> LINN.	.. .. .. .. ..	64		"    chinensis BENTH.	.. .. ..	85	
"    uraiensis HAYATA	.. .. .. .. ..	64		<b>RUTACEÆ.</b>	.. .. .. .. ..	8	
<b>Paris</b> LINN.	.. .. .. .. ..	141		<b>Sambucus</b> TOURN.	.. .. .. .. ..	41	
"    arisarensis HAYATA	.. .. .. .. ..	141		"    formosana NAKAI	.. .. ..	41	
" <sup>10</sup> <i>pphylla</i> HAYATA	.. .. .. .. ..	142		"    jwaniva HAYATA	.. .. ..	41	
<b>Phaseolus</b> LINN.	.. .. .. .. ..	31		<b>Schizandra</b> MICHX.	.. .. .. .. ..	4	
"    heterophyllus HAYATA	.. .. .. .. ..	32		"    arisamensis HAYATA	.. .. ..	3	
"    Mungo LINN.	.. .. .. .. ..	31		<b>SCITAMINEÆ.</b>	.. .. .. .. ..	118	
"    rotundifolius HAYATA	.. .. .. .. ..	33		<b>SCROPHULARINEÆ.</b>	.. .. .. .. ..	76	
"    trilobus AIT.	.. .. .. .. ..	34		<b>Securinega</b> COMM.	.. .. .. .. ..	93	
"    trilobus HAYATA	.. .. .. .. ..	33		"    fluggeoides MUELL. ARG.	.. .. ..	93	
<b>Phellodendron</b> RUPE.	.. .. .. .. ..	8		<b>Shortia</b> TORR. et GR.	.. .. .. .. ..	66	
"    Wilcockii HAYATA et KA-				"    transalpina HAYATA	.. .. ..	66	
NEHIRA	.. .. .. .. ..	8		"			
<b>Photinia</b> LINDL.	.. .. .. .. ..	39		<b>Siphonostegia</b> BENTH.	.. .. .. .. ..	79	
"    ardisiifolia HAYATA	.. .. .. .. ..	39		"    chinensis BENTH.	.. .. ..	79	
<b>Phyllanthus</b> LINN.	.. .. .. .. ..	93		<b>Smilacina</b> DESV.	.. .. .. .. ..	141	
"    bacchariformis LINN.	.. .. .. .. ..	93		"    formosana HAYATA	.. .. ..	141	
"    oligospermus HAYATA	.. .. .. .. ..	93		"    japonica HAYATA	.. .. ..	141	
"    takaensis HAYATA	.. .. .. .. ..	94		<b>Smilax</b> LINN.	.. .. .. .. ..	126	
<b>Polygonatum</b> ADANS.	.. .. .. .. ..	140		"    arisanensis HAYATA	.. .. ..	127	
				"    elongato-reticulata HAYATA	.. .. ..	127	

<b>Smilax</b>	elongato-umbellata HAYATA	..	130	Thladiantha formosana HAYATA	..	..	41	
"	formosana HAYATA	..	127	Torenia LINN.	..	..	80	
"	gracillima HAYATA	..	131	"	Fordii HAYATA	..	..	80
"	herbacea LINN. var. daibuensis			"	hokutensis HAYATA	..	..	80
	HAYATA	..	131	"	nantoensis HAYATA	..	..	81
"	horridiramula HAYATA	..	131	<b>Uncaria</b> SCHREB.	..	..	49	
"	Olivieri HAYATA	..	133	"	formosana HAYATA	..	..	49
"	ovato-rotunda HAYATA	..	133	"	Kawakamii HAYATA	..	..	49
"	taiheiensis HAYATA	..	134	"	raiensis HAYATA	..	..	49
"	takavensis HAYATA	..	135	<b>Uraria</b> DESV.	..	..	26	
"	tenuissima HAYATA	..	137	"	formosana HAYATA	..	..	26
"	trachyclada HAYATA	..	138	"	latisepalata HAYATA	..	..	26
<b>Spiraea</b> LINN.	..	..	..	"	yaeayemensis HAYATA	..	..	26
"	tarokoensis HAYATA	..	38	<b>URTICACEE</b>	..	..	104	
<b>STERCULIACEE</b>	..	..	..	<b>Vandellia</b> cruciformis HAYATA	..	..	78	
<b>Strobilanthes</b> BLUME	..	..	..	"	stellarifolia HAYATA	..	..	78
"	lasiocalyx HAYATA	..	82	<b>Vanilla</b> Sw.	..	..	114	
"	longespicatus HAYATA	..	83	"	roncensis HAYATA	..	..	114
"	prionophyllum HAYATA	..	84	<b>Veronica</b> LINN.	..	..	81	
"	rankanensis HAYATA	..	84	"	politula FR.	..	..	81
"	Tashiroi HAYATA	..	85	<b>Viburnum</b> LINN.	..	..	41	
<b>STYRACEE</b>	..	..	..	"	Matsukai HAYATA	..	..	41
<b>Styrax</b> LINN.	..	..	..	"	melanophyllum HAYATA	..	..	43
"	kotoense HAYATA	..	68	"	morrisonense HAYATA	..	..	43
<b>Symplocos</b> LINN.	..	..	..	"	tailhasense HAYATA	..	..	45
"	japonica A. DC.	..	68	"	vilosifolium HAYATA	..	..	45
"	kirishimensis HAYATA	..	68	<b>Vigna</b> Sav.	..	..	34	
"	hucida SIEB. et ZUCC.	..	68	"	acuminata HAYATA	..	..	34
"	Somai HAYATA	..	69	"	reflexipilosa HAYATA	..	..	32
"	sozanensis HAYATA	..	70	"	stipulata HAYATA	..	..	34
<b>Tephrosia</b> PERS.	..	..	..	<b>Zelkova</b> SPACI.	..	..	104	
"	inophtlebia HAYATA	..	21	"	acuminata HAYATA	..	..	104
<b>TERNstroemiacée</b>	..	..	..	"	formosana HAYATA	..	..	104
<b>Thladiantha</b> BUNGE	..	..	..	"	tarokoensis HAYATA	..	..	104



ICONES PLANTARUM FORMOSANARUM.

IX.

PLATE I.

## Explanation of Plate I.

*Dumasia bicolor* HAYATA.

- Fig. 1. The plant.  
2. A flower.  
3. A wing.  
4. A keel.  
5. A folded portion of the same keel.  
6. Stamens.  
7. A deliquescent pod.  
8, 9. A seed, seen from different sides.





ICONES PLANTARUM FORMOSANARUM.

IX.

PLATE II.

## **Explanation of Plate II.**

*Millettia taiwaniana* (MATSUM.)

- Fig. 1. A branch.  
2. A standard.  
3. A wing.  
4. A keel.  
5. Diadelphous stameus.  
6. Ovary.  
7. A pod.





ICONES PLANTARUM FORMOSANARUM.

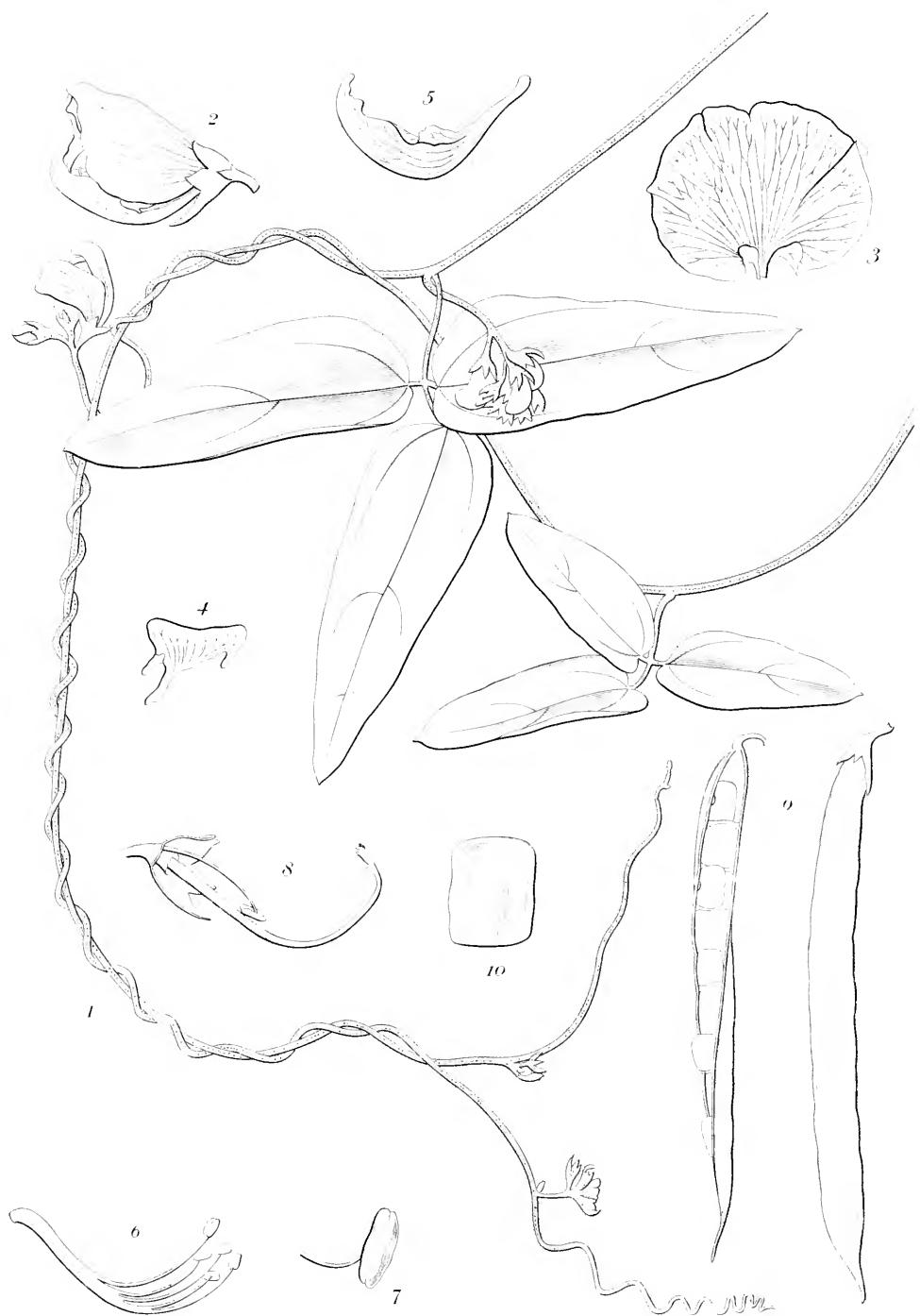
IX.

PLATE III.

### **Explanation of Plate III.**

*Dolichorhynchia formosana* HAYATA.

- Fig. 1. A branch.  
2. A flower.  
3. A standard.  
4. A wing.  
5. A portion of staminal bundle.  
6. An anther.  
7. Ovary with stamen and calyx.  
8. Pods.  
9. A seed.





ICONES PLANTARUM FORMOSANARUM.

IX.

PLATE IV.

## **Explanation of Plate IV.**

*Symplocos kiraiensis* HAYATA.

- Fig. 1. A branch.  
2. A flower.  
3. Corolla with a portion of a staminal bundle.  
4. A stamen, seen from different sides.  
5. Ovary and style.  
6. Apical portion of the ovary and basal portion of the style.  
7. A branchlet with a fruit.  
8. Cross section of a drupe.





ICONES PLANTARUM FORMOSANARUM.

IX.

PLATE V.

## Explanation of Plate V.

*Jasminum Simondii* HAYATA.

- Fig. 1. The plant.
- 2. A corolla-lobe.
- 3, 4. A stamen, seen from different sides.
- 5. Ovary and style.
- 6. Vertical section of the basal portion of the same.





ICONES PLANTARUM FORMOSANARUM.

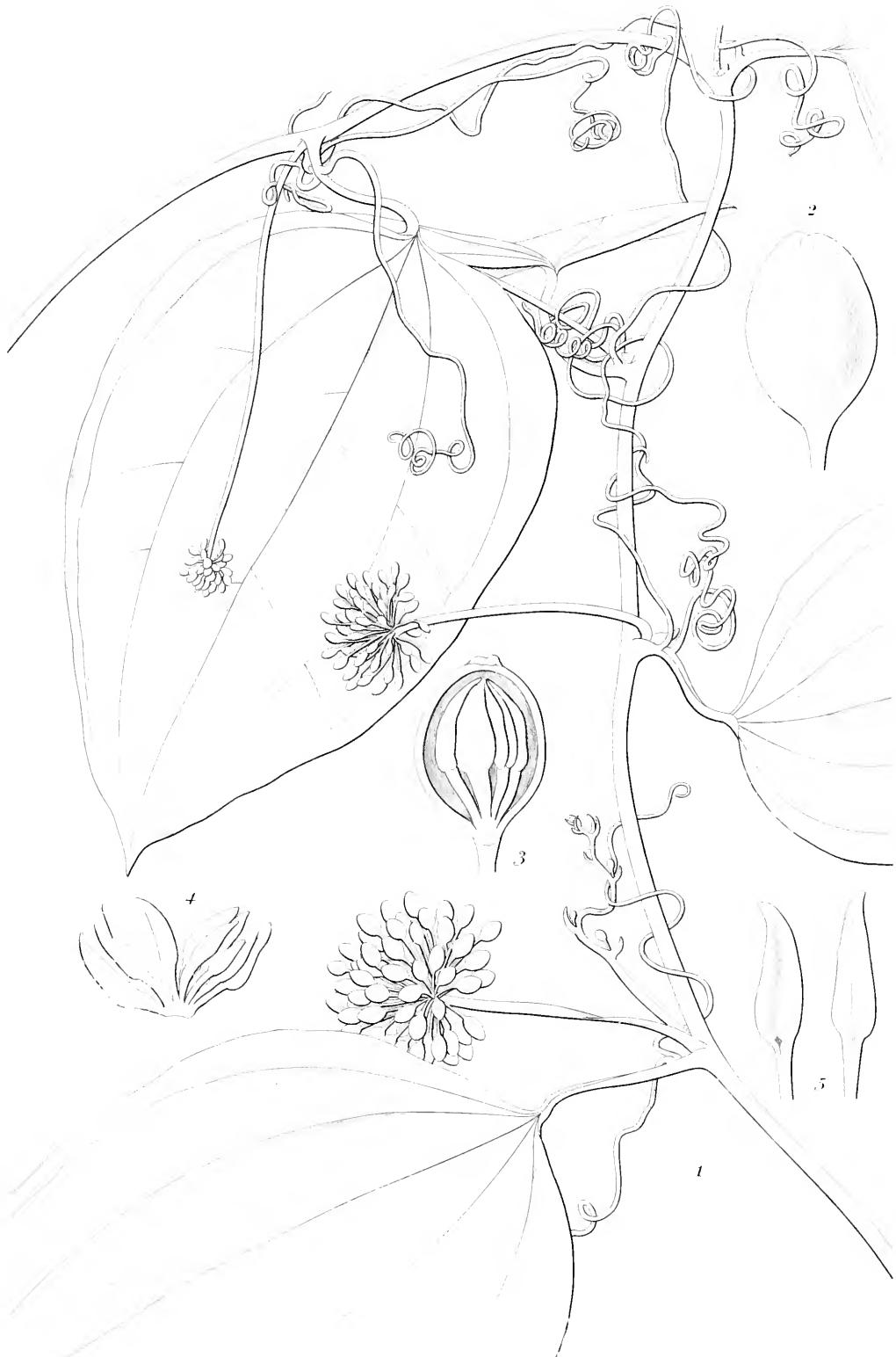
IX.

PLATE VI.

## **Explanation of Plate VI.**

*Pseudosmilax seisuiensis* HAYATA.

- Fig. 1. The plant.  
2. A flower.  
3. Vertical section of the same.  
4. Stamens.  
5. A stamen, seen from different sides.





ICONES PLANTARUM FORMOSANARUM.

IX.

PLATE VII.

## **Explanation of Plate VII.**

*Arisema quinquefolia* HAYATA.

- Fig. 1. The plant.  
2. A male spadix.  
3. A stamen.  
4. A female spadix.  
5. An ovary.





大正九年三月二十日印刷  
大正九年三月廿五日發行

編輯兼發行者　臺灣總督府營林局

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